

AMAZING STORIES

February, 1937
25 Cents



"BY JOVE!"

by WALTER ROSE

S.A. COBLENTZ - JOHN EDWARDS



"The loser's stuck to take her home"



THE very boys who used to seek her out, now match to see who will be "stuck" to take her home. That's what halitosis (bad breath) can do to a girl, without her ever suspecting the reason for the sudden change in her fortunes. Too bad that this offensive condition doesn't announce itself to the victim instead of to the victim's friends.

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Why offend others needlessly? To put yourself on the agreeable side, before social and business engagements rinse the mouth with Listerine, the quick deodorant. Millions of people use Listerine every day simply because of its wholly delightful effect.

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Keep Listerine handy in home and office and use it systematically.

LAMBERT PHARMACAL COMPANY
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Read what happened



YES!
I'll take your training. That's what S. J. Ebert said. He is making good money and has found success in Radio.

to these two men
when I said:



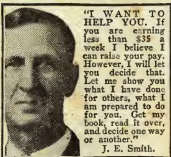
NO!
I'm not interested. That's what this fellow said. Today he would be ashamed if I gave you his real name.

I will Train You at Home in Spare Time for a GOOD JOB IN RADIO

These two fellows had the same chance. Each clipped and sent me a coupon, like the one in this ad. They got my book on Radio's opportunities.

S. J. Ebert, 104-B Quadrangle, University of Iowa, Iowa City, Iowa, saw that Radio offered him a real chance. He enrolled. The other fellow, whom we will call John Doe, wrote that he wasn't interested. He was just one of those fellows who wants a better job, better pay, but never does anything about it. One of the many who spend their lives in a low-pay, no-future job, because they haven't the ambition, the determination, the action it takes to succeed.

But read what S. J. Ebert wrote me and remember that John Doe had the same chance: "Upon graduation I accepted a job as serviceman, and within three weeks was made Service Manager. This job paid me \$40 to \$50 a week compared with \$18 I earned in a shoe factory before. Eight months later I went with station WKCR as operator. From there I went to KTNT. Now I am Radio Engineer with WSUL. I certainly recommend the N. R. I. to all interested in the greatest field of all, Radio."



"I WANT TO HELP YOU. If you are earning less than \$35 a week I believe I can raise your pay. However, I will let you decide that. Let me show you what I have done for others, what I am prepared to do for you. Get my book, read it over, and decide one way or another."

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good jobs soon. Men who have taken N.R.I. Training are holding good jobs in all these branches of Radio.

Many Make \$5, \$10, \$15 a Week Extra in Spare Time While Learning

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Get My Free 64-Page Book Now

Mail the coupon now for "Rich Rewards in Radio." It's free to anyone over 18 years old. It describes Radio's spare time and full time opportunities and those coming in Television; tells about my Training for Radio and Television; shows you actual letters from men I have trained, telling what they are doing and earning; tells about my Money Back Agreement. MAIL THE COUPON in an envelope, or paste it on a penny postcard—NOW!

J. E. SMITH, President
National Radio Institute, Dept. 7AM
Washington, D. C.



FOR FREE BOOK OF FACTS ABOUT RADIO

J. E. SMITH, President, National Radio Institute
Dept. 7AM, Washington, D. C.

Dear Mr. Smith: Without obligating me, send "Rich Rewards in Radio," which points out the spare time and full time opportunities in Radio and explains your 50-50 method of training men at home in spare time to become Radio Experts. (Please write plainly)

NAME AGE.....
ADDRESS
CITY STATE.....



AMAZING STORIES

Science Fiction

Vol. 11

FEBRUARY, 1937

No. 1

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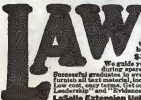
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T. O'CONOR SLOANE, Ph.D., Editor
Editorial and General Offices: 461 Eighth Avenue, New York, N. Y.

Extravagant Fiction To-day Cold Fact To-morrow

Measures and Weights

By T. O'CONOR SLOANE, Ph.D.

THE decimal system of numbers and of arithmetical calculation has spread over a great part of the earth. A very obvious suggestion of the reason for this has long been advanced, based on the fact that man has ten fingers and has accepted these as the basis for his counting. It gives what may be termed an anatomical basis for our numeration. But the number ten seems to have been a unfortunate selection because it can only be divided by two numbers, two and five. Of the numbers below ten there are five which have no divisors, and are prime numbers, a prime number being one which has no divisor. There are any number of prime numbers. Then there is the number four which has two as its only divisor, nine which has three as its only divisor, and six and eight which have two divisors each.

What mankind seems to have done

is to have accepted his ten finger notation, as it may be called, and to have honored his tenth numeral with two figures, the figure one followed by a cipher, if we may call a cipher a figure. But suppose we had gone two steps further, how much better would it have been. Ten and eleven would each have been indicated by a single character and the unit, one, followed by a zero, would designate what we call twelve. This is divisible by four numbers, and would certainly be far better as a basis than is the number ten. A good many of those who may be called the advocates of lost causes, have been very enthusiastic about the duodecimal system as it is called, the system having twelve for its base. Duodecim is the latin word for twelve. But from all present indications the change will never be made unless in the dim future, and probably not then.

The hundred of the duodecimal sys-

tem would have a number of divisors. This number would be our one hundred and forty four. We leave it to the reader to try how many divisors he can get for it. Then he can try our present number, one hundred, and see how few that will give.

It would be no easy matter to get rid of the decimal system, for it is in universal use in so large an area of the earth. But this use is for ordinary calculating, as in the realm of arithmetic, because it is departed from when special cases of calculation are concerned. And these cases are not few. In England the pounds, shilling, pence and farthing of their currency introduce a needless complication, filling a section in the arithmetics and giving school children one more case of denominate numbers, on which they can exercise their patience.

For transactions in the English Lloyds, an insurance organization, the case is still further complicated in some cases by using the twenty shilling pound and the twenty-one shilling guinea in the same calculation. The extra shilling is supposed to go to one of the parties in the transaction. The guinea has long been the customary fee for a physician, and anecdotes are told of a celebrated doctor looking all over the room for the extra shilling, when his fee had been given as a pound instead of the more lucrative guinea.

The dozen is an instance of a departure from decimals. The egg-merchant has to sell his eggs at a definite price not for each egg, nor for ten eggs which would be in the decimal order of things, but by the dozen. The price of the eggs is given in twelves or dozens, but they are paid for in decimal currency in this country.

The linear quantities are involved in complication for no good reason

unless it is that they have always been so, which is a poor enough qualification. In the old arithmetics the table of linear measures is an example of persistence of illogical dimensions. The table used to begin with "three barleycorns make one inch." This is bad enough, for barleycorns vary in size, and it is futile to use them for a basis of a scale of dimensions. Then to make the matter worse we read in the *Encyclopedia Britannica* that it may be four barleycorns instead of three which constitute an inch. This is a strange way to start a scale of dimensions but there is more to come.

A duodecimal unit now makes its appearance, the foot, twelve inches in length. This unit of length gives four divisions of its constituent inches. If we want a sixth, a quarter, a third or half foot, they will be found on the inches marked on a foot rule. The universal measure for drygoods, the yard, comes about as close to the meter, the base of the metric system, as possible. It is about three and a third inches shorter than the meter.

A very convenient little machine is now in use for measuring dry goods, it is the successor of the brass headed tacks which we have seen and still see on the inner edge of counters in stores. It is said that there was a custom of measuring yards by the outstretched arm. This of course was very inaccurate and it is said that it was often objected to and the clerk was told to try the measurement by the brass tacks on the counter's edge. This is given as the origin of the proverbial expression, "to come down to brass tacks," meaning to be accurate in your statements.

After the yard we come to another curious unit of measurement, the rod, perch or pole. Why it had to have three names is not clear. The people

of those days seem to have been fond of fractions, for the unit of measurement we are speaking of was sixteen and a half feet in length, and as it was often expressed in yards, the fraction of half of a yard appeared when its length was given as five and a half yards.

What must be a survival of a rather distant past is the land-surveyors' link and chain. The chain of twenty five links, each link seven and ninety two hundredths of an inch in length, gave a length of one rod, and the full chain of one hundred links was a unit called the chain, which was sixty six feet in length, and which, as the basis for measurement of area, led up to the acre and to the square mile.

The subject could be treated far more fully than our space allows. The steel tape came into use and is made more accurate by being made of an alloy of 64 per cent steel and 36 per cent nickel, whose changes in length with changes in temperature are very slight.

The French revolutionists were not only interested in giving victims to the guillotine, but had a desire to improve the calendar and to devise a new unit of measurement. They divided the year into twelve months, each month of thirty days in length, and added the missing five or six days to the months at the end of the year, calling them the *sansculottides*. The addition of the six days was made for each fourth year to take care of what we call the leap year. The failure of the earth to complete its annual revolution around the sun in an exact number of days has always given a certain amount of trouble to mankind. The system of the French Revolutionists was no better than the one in general use, and only lasted a few years. While we use the name "ninth Ther-

midor" to give the day of the fall of Robespierre, it would be much better if we used the universal nomenclature and expressed the day as the 27th of July, 1794.

But besides the poor attempt to straighten out the irregularities of nature, as exemplified in the relation of days and years, the authorities of the French Revolutionary era sensibly enough made a real attempt to get rid of the irregularities in the system of weights and measures. To form an idea of the complication one may consult the Unabridged Dictionary and see the hopeless confusion existing today among the units of measurements. So the French realizing this selected about the most unchangeable thing they knew of as the basis for a unit of length. What they selected was the circumference of the earth, and one forty millionth of it was to be the unit of length, and from it the other units larger and smaller, of area and of volume were to be derived by multiplication or division. This simplified the confusion which existed then and a great part of which persists in the present days.

The idea of the metric system, as it is called, was to assign a fixed basis for the system, and a basis which was susceptible of verification at any future time. The circumference of the earth at the equator is greater than it is at the meridian passing through the poles. The Mississippi in flowing from the Lake of the Woods to the Gulf of Mexico, flows from a latitude where the earth is of less diameter than it is at the Gulf, so it is fair to say that the river in question flows up-hill. If the earth ceased to rotate, the water from the south would pour in a perfect torrent through the Mississippi and inundate the northern world with a deluge of salt water. It

is the centrifugal force of the earth's rotation which saves us from this calamity, and which is doing the same service for all northern and southern regions.

The original measurement on which the length of the meter was to be predicated was not strictly accurate. It gave the length of the meridian of the earth approximately only, although it was supposed to be an exact determination. But what it did do was to establish the length of the unit of length from which all other units of weight and volume were to be deduced. But if the question came up of how long the theoretical meter was, it would have to be acknowledged that we did not know, if we depended on the measurements of the days of the seventeen nineties. It would seem that the proper line to employ in making the measurement, would have been the equator, which is a perfect circle or rather could be reducible thereto. If the meridian measurement is to be used the line extending from the Balearic Islands to Dunkirk, on the coast of the German Ocean, gives an almost perfect segment of the meridian, whose northern and southern ends are almost exactly at equal distances from the north pole and from the equator respectively. This meridian has been used for one of the meridian measurements in more recent times. For an equatorial measurement the Desert of Sahara might do.

Great efforts have been made to have the metric system introduced into this country. But the United States following the path trodden by England sticks to its own system. It differs very little from the English system. The English gallon is based on ten pounds of water; the American gallon is one fifth less. An English-

man will state his weight not in pounds, which would seem reasonable, but will give it based on the stone, which is equal to fourteen pounds. If a fraction of a stone is involved he will state his weight as a mixed number, or as stones plus pounds. The easiest way to reduce stones to pounds is to multiply the stones by seven and double the product. Then to the product should be added any excess of pounds. It would be far simpler to give one's weight in pounds directly as is the custom here.

The height of a horse here and in England is stated in hands, the hand being four inches. If we divide the number of hands by three, we get the result in feet and inches. What merit there is in using a four inch unit of measurement is not clear. We have already referred to the ancient unit of measurement, the barleycorn, taken as the third of an inch. This unit is no longer in use except for shoes, and the name is seldom heard, the sizes of shoes being stated in letters for widths and in numbers for lengths.

Physicians and druggists use a purely arbitrary scale of weight called the Apothecary's Scale. This is an especially complicated set of units, but has been used for so many generations that it will be a long time before it goes out of use, especially as it figures in so many prescription formulas. Metric prescriptions are used to some extent.

England has given us the ton of two thousand two hundred and forty pounds, whose twentieth part is termed the hundredweight or one-hundred and twelve pounds. It is a strange piece of nomenclature to deliberately use such obviously incorrect terms. In this country we use as a rule the two thousand pound ton, which is arithmetically considered an

improvement on the "long ton," as the 2,240 pound unit is often called.

There is one line of work in which the metric system has won out in this really conservative land of ours, as well as all over the Caucasian world. This is in the chemical and physical laboratory. No chemist would dream of doing his analyses in the complicated apothecary system. By a little practice a chemist can accurately weigh the substance he is to analyze in a portion of one gram. This not only simplifies his calculations of results but is to a degree an insurance against error. It is impossible to state what proportion of chemists use the gram of the sample to be analyzed, as the starting point. It is surprising to observe how nearly the practised analyst comes to putting a gram of the substance he is working with upon the watch-glass on the balance-pan. It is fair to say that if it ever does come out a gram at the first trial it should be accounted a chance.

Many pages could be devoted to describing the scientists' balances of the advanced type. The fundamental idea is definite enough. There is a horizontal beam, carried by a sharp edged bar passing through its center at an exact right angle to the beam. The beam must be absolutely inflexible under any stress to which it may be subjected. This requirement is simplified by the limitation of the weights to be placed on the scales or pans as they are more properly called. The

bar in question is sharpened to be an exact edge and the beam is exactly at right angle to the sharp edge. The edge in question rests on a truly plane surface on the top of a pillar. At its ends the beam carries two corresponding knife edges, whose sharp edges point upward. Each of these knife edges carries a scale one for the weights and one for the substance to be analyzed. The edges of the three supports must be exactly parallel to each other, and must lie on the same absolutely straight line. Such are the outlines of the requirements of a chemical balance. A little hairpinlike wire is provided to be moved back and forth upon the perfectly straight beam, and there are various other adjuncts. On an ordinary balance the rider, as the moveable wire weight is called, can carry the weighing down to a small fraction of a milligram.

After the French scientists had settled to their satisfaction what the length of a quadrant of a meridian was, one ten-millionth was taken as the basic unit of dimensions, linear, surface and solid. This length is the meter and the one hundredth part is the centimeter. The weight of a cubic centimeter of water is the gram, the base of metric system weights. The analytical chemists' balance for his everyday work will weigh a quantity as small as one twenty thousandth part of a gram. But balances are in everyday use that are far more delicate than this.



The Planet of Perpetual Night

By JOHN EDWARDS

The Great Nebula in Orion is, of course, known to our astronomically disposed readers. In the middle of it there is a large black spot called the "Horse's Head" or the "Fish Mouth." This story will bring this before our readers very picturesquely.

FOREWORD

IS such a thing as total darkness possible in Space? Whether or not we accept the ether theory, that is, the presence of "an all-pervading yet intangible medium" throughout the Universe, the author considers that a "hole in Space," though improbable, is not impossible. At present we know too little about the existence or non-existence of such a medium to dogmatise one way or the other—and must beware of an inclination in these days to accept many such theories as facts. Such a world as the dark planet in this story, with its light-absorbing, non-reflecting envelope, could exist undetected by us within the limits of the Solar System for ages, if not too close to the earth. The author here gives his idea of what might be found on such a planet.

J. E.

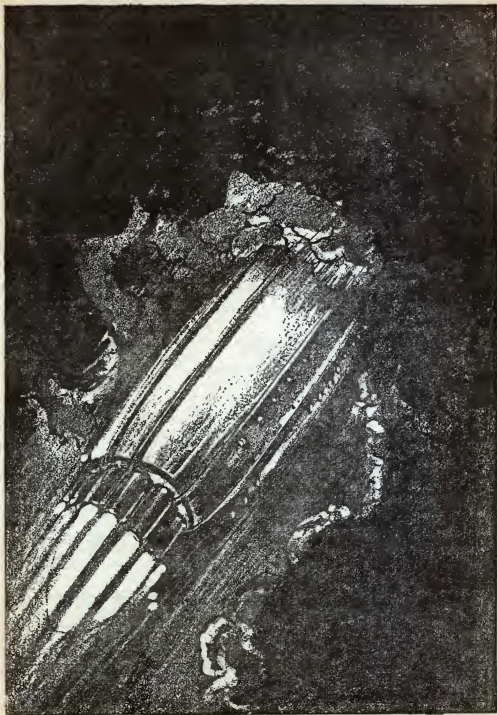
CHAPTER I

LOST!

FROM the rear observation compartment of the space-vessel *Elemental*, her commander stood dreamily watching the glittering planet Venus—that bright jewel of

the Solar System—as it appeared to dwindle steadily from a rosy-colored balloon to the size of a tennis-ball. His big hands gripped firmly two of the numerous hand-grips which were attached to the cylindrical walls of the compartment, to prevent his now weightless body from floating awkwardly about in space. His ship, one of the oldest of the fleet of inter-planetary craft owned by the Earth's Solar Exploration Department, had not yet reached the stage where compensation could be made for the lack of earth-gravity. That was a feature of the latest and speedier ships only.

After our satellite, the moon, Venus was the first planet which the new adventurers of the S. E. D. had succeeded in reaching many months before, and the *Elemental* was now returning to earth after her second visit to the sister planet, to report the result of her investigations there. A few score of the S. E. D. staff were already established as an outpost on Venus, as there was still much exploration work to be done. Circling the sun, at present nearly eighty million miles away, in an ever-widening arc, the cigar-shaped space-vessel plunged on its complicated orbit to-



The diamond-studded darkness before them seemed to end abruptly, to be replaced by a huge ball of even denser black through which no stars gleamed.

AmS

wards the earth, shooting along like a meteor under the impulse of its Halley-Kyne electronic generators.

They were approximately midway between the Earthian and Venerian orbits when the sliding-door of the compartment opened to admit the long, lean form of Tony Murdoch, the bull-voiced chief engineer of the *Elemental*, and known officially in the S. E. D. records as Engineer AM/5210.

Gene Hutton, otherwise Commander GH/2030, turned to watch his chief helper and friend gingerly groping his way across the compartment—a delicate but amusing operation to an onlooker.

"Gene, my lad, the sooner that thick-headed Research Staff of ours devises some form of artificial gravity, the better I'm going to like it—groping about this ship like a blessed spider!"

"Time you were accustomed to that by this time, Tony. What seems to be the trouble this time?" Murdoch was always in trouble.

"Elliot reports something queer ahead, just off our course. I haven't repaired the voice-tube yet, else you'd have heard about it before now. I've had a look, but I can make nothing of it. Looks like a mighty hole in Space—anyhow, come and see."

The two friends pulled themselves along the fore-and-aft corridor by means of the handrails, and entered the forward control room. Peering out of the thick unbreakable glass ports which overlooked the heavily-armored nose of the ship, Hutton could at first see nothing unusual. Straight ahead, the two-inch crescent of the earth and its companion moon floated majestically, reflecting the cold blue-white rays of the sun. Far away to the right, the brilliant red spot of light

which was Mars shone with a brightness unknown on earth, and the distant suns sparkled through the surrounding purple-blackness of Space. On his left lay the unwinking solar orb, looming larger than on earth—a huge, lonely-looking globe in the enclosing blackness.

Murdoch pointed forward and slightly to their left side.

"There it is. Blacker than Space itself—watch that star disappear behind it!"

The bright star which the engineer pointed out as a guide lay apparently below their line of flight, and within a few minutes of his remark it simply vanished as if some monstrous shadow had come between it and the *Elemental*. It was then that Gene Hutton saw what his companion was pointing out. He promptly moved the control telegraph, and the great machine began to slow slightly as the muffled roar of the electronic discharge died down aft. The diamond-studded darkness before them seemed to end abruptly, to be replaced by a huge ball of even denser black through which no stars gleamed. A long inspection through powerful glasses revealed nothing but sheer inkiness, totally unrelieved by a vestige of light of any description. Hutton was puzzled.

"There's certainly something queer about this," he said as he laid down the binoculars. "If that was a planet ahead, we should at least see a crescent of reflected sunlight from this position—but there's just nothing at all! Tony, you had better get along to the radio cabin and get into touch with Headquarters at once. Ask if they can see anything out here, and tell 'em I request permission to investigate this little matter. Meanwhile we'll go ahead a bit until this thing

is between us and the sun. That might reveal something."

TAKING over the controls from the man Elliot, as Murdoch left the compartment, Hutton hurled his vessel onwards again—to the discomfort of the engineer in the passage outside, who suddenly found himself temporarily endowed with a weighty body under the renewed acceleration. An hour or so later by the chronometer, the sun's bright orb mysteriously disappeared to the left of their line of flight, followed soon after by the now far distant tiny disc of Venus. Having received permission from his superiors on earth to proceed to satisfy his curiosity, but no other information about the Unknown before them, Gene Hutton slightly altered his course to approach the intense black mass.

For several hours the *Elemental* shot onwards, with the inky nothingness on the left, and guided by the star-studded universe—on the right hand. Continuing to circumnavigate the enormous non-reflecting mass, the sun's globe came once more into view—first ahead of them, then passing away to the right side of their vessel. At last, having completely encircled the spherical blackness in an anti-clockwise direction, they were back in much the same relative position in the Solar System as when the mass was first observed; and little the wiser for their trouble!

With their vessel drifting at rest within several hundred miles of the gigantic patch of blackness, Hutton and Murdoch each made a rough calculation, while Elliot stood-by at the control switches.

"Well, I should say at least twenty-seven thousand miles across," hazarded Murdoch, after an interval.

His commander looked doubtful. "I make it nearer twenty-three. Traveling all out for over six hours, you know, at a probable distance of five hundred above the fringe, or surface, or whatever it is. Allowance for gravity-pull"

The engineer shook his head. "I allowed nothing for gravity. D'you notice how we're floating calmly about here within several hundred miles of that . . . that . . . whatever it is? If that was a planet; or if there's one behind all that, we'd be plunging at it now with our anti-gravity apparatus going all out to check our fall—and fall it would be! The *Elemental* was never designed to meet a planet of that size."

Hutton looked at his scrawled figures a few seconds, then nodded. "Then it is nearing the twenty-seven thousand, as you say. This is no planet apparently—so what the devil can it be? Even if it was gas, it would reflect the sun's rays—but when we passed between it and the sun, we saw the same as we see from here. You're quite right in calling it a hole in Space—it's simply a lump of jet-black nothingness!"

"And our earth-stations can see nothing out this way either," murmured Tony Murdoch, his reddish features twisted in thought. "Well, we should try—er—sailing *through* it next, I suppose?" Gene Hutton looked at him straight in the eyes for a few moments, then grinned delightedly. "Sure enough, old man; I'm game! Things have been a bit monotonous lately—but we'll need to put it to the rest of the crew first, because God alone knows what lies behind that mass! Elliot, tell the rest of the men I'd like to speak to them in your day-room."

While the young navigator was

gone, the Commander and his Chief Engineer examined the vessel's "mass indicator," which was supposed to show the near approach of any body near them in Space. Although the ship was merely drifting at the time, the sliding bar showing the density in relation to the mass of neighboring objects was behaving in a queer fashion, oscillating back and forth, and never at rest. The mass-indicator itself stood near zero.

"That shows us a lot," commented Murdoch disgustedly, "and when I get back, somebody's going to hear something about the dependability of the S. E. D. instruments! According to that there's nothing here in mass, and the density-bar doesn't seem to know what to do! Either this contraption is out of order, or we're up against something quite beyond our experience—most likely the former, if I know anything about these instruments!"

THERE was no difficulty in persuading the small crew of six men, including Elliot, to agree to tackling the Unknown. None of them were married, or possessed any particular ties on earth—as Hutton had been well aware when he chose them. They had all been long enough with him to go with him and Murdoch into almost anything, however dangerous. Hutton was not known to his intimates as "The Lucky Genie" for nothing! A bearing of the position in relation to the earth and Sun was taken, and radioed to the Earthian Headquarters—and that was the last the "Big Noises" of the S. E. D. heard of the *Elemental* for some time. Turning the blunt nose of his craft towards the dark mass, a ticklish business with these crude and elementary space-vessels, the commander thrust

her forward at moderate speed into the Unknown.

Exactly when they entered the fringe of the strange blackness they were unable to tell, but the sparkling universe around them apparently ceased to exist within about half-an-hour by the chronometer. They found themselves surrounded by impenetrable darkness beside which the purple-black of Space itself was mere twilight. Gone entirely were the sun, planets, and glittering stars—their only guides in the appalling abyss of Space. The gravity-indicator was jumping about in uncertain fashion when they were last able to observe it—for slowly but surely the interior lighting equipment of the *Elemental* began to fail as they thrust steadily onwards. The fog and gas-piercing rays of their forward searchlights thinned down to a mere glimmer, then finally disappeared altogether. At the same time the inside lights went out, leaving them in a terrible world of intense blackness which closed in on them like a tangible thing, and stirred in these hard-bitten wanderers their first feelings of fear—fear of the Unknown.

Gene Hutton's voice, strained and husky, broke the dead silence which followed the onset of the total darkness. "By God, Tony, this is terrible! I daren't take my hands off the control panel, else I'd never find it again. What's come over the light supply? The generators seem to be working yet."

"There's nothing wrong with our motors," came the engineer's voice from the darkness. "Something in this place is stopping our light rays, that's all. Just a minute while I try the flame-producer . . ." There followed a scratching sound and a slight click, as Murdoch struck his pocket

flame-producer, a little instrument which had superseded the matches of previous years. "... Damn the thing!"

"What's wrong with it?"

"Nothing," Murdoch's voice sounded bewildered. "There's no flame to see, but I've just burnt my fingers by placing them over the nozzle! Gene, the thing's burning now, but I can't see it—what's the matter with my eyes? Do you see anything?"

The terror in the engineer's voice startled Hutton, and he peered vainly into the black in the direction of the voice.

"There's nothing to be seen from here. Shut it off before you set fire to something we can't see! We're either both blind, or we're up against something nobody's ever struck before! Who's that?"

Someone had entered the control tower while he spoke.

"This is Elliot. What's wrong with the lights, chief? The engineers say the generators are still in order, but they daren't move from their stations until you stop the motors."

FROM the darkness came the click of the telegraph indicator, and the muffled hum which could be heard behind the insulated chamber died suddenly away.

"That will release them, at any rate. I'd almost forgotten the other chaps for a few moments—I feel as if I'm existing alone just now, without weight, without sight. We simply don't know what is the trouble, Elliot. We're up against the Unknown with a vengeance. Have you a torch with you?"

"Yes," came the reply, "and it's switched on at this moment, pointing across the room! All the electric hand torches are the same—there's not a

single thing will give a beam of light of any color or kind!"

"Tried changing the bulbs?"

"Several times; same result. What's the next move?"

"Hanged if I can tell. We don't know where we are going or whether we *are* moving in this confounded inkiness! Tony, you had better scrape along to the power compartment somehow or other, and take charge there to avoid any possible panic. I'll try to pivot the ship, and then we'll risk going ahead slowly. It's a good job we use a sounding telegraph and not a visual one. If we keep going ahead—if ahead it is!—long enough, we're bound to land up somewhere."

"Obviously!" grunted Murdoch from the doorway, where he was feeling his way with extreme caution. "So long as we end up in one complete piece, and where there's some light, that idea's really brilliant! Here goes—and I sincerely hope I open the right doors!"

With much bumping about, and sundry cursing, the engineer departed, leaving the chief control-man and the Commander together.

"It's a good thing that we have the 'feel' of the old ship by this time, Elliot, and that we know the controls by touch—but I do miss the indicator dials," observed Hutton, as he carried out in the darkness the necessary operations for altering their line of flight. "When we get back to earth, our little report will give the physicists something to argue about—then they will likely end up by telling us that we dreamt it all!"

"This is certainly a puzzling affair," said Elliot, who had found a seat near his Commander, "and you could hardly blame anybody for not believing it, if they never actually go through such an experience."

"Seems to me that it is growing very hot in here," said Hutton after a long interval of silence. "D'you notice it?"

"I was just going to say so myself. The exhaust fan is still drawing off, if the row is any indication . . . " the mechanical ventilation system of the *Elemental* had long been the subject of bitter comment amongst her engineers; ". . . I wonder if it is . . . " Elliot stood up in the darkness, groping for the handgrips on the inner hull, and touched the hull itself. He hurriedly withdrew his arms with an abrupt exclamation.

"The blessed shell's hot! We must be in an atmosphere of some kind. Are you slowing her up, chief?"

Hutton wasn't doing anything of the kind, though he quickly took the necessary measures at his pilot's remark, which thoroughly startled him. Atmosphere! Of course, that was all it could be, if the well-insulated inner shell was hot. Heaven knows what the outer hull would be like, reflected Hutton, if the frictional heat had penetrated so far already. He made a helpless gesture in the blackness of the compartment.

"I wish to Heaven I could see the gauges," he muttered. "I thought we were making out of this mess; but we seem to be going deeper into it every second! Another thing, Elliot. I feel less trouble in keeping to the bottom of the room now—feel as if I weigh a few pounds in fact!"

There was an exclamation from the invisible Elliot. "Fat-head that I was, I scarcely noticed that! Here I've been sitting on a seat for the last few minutes, without thinking what was holding me down there! Then you think we're approaching a planet?"

"Well, we're nearly on top of some-

thing solid, and the Lord alone knows at what rate we're dropping! I've shut off everything but the gravity-resisting gear, and I simply haven't the faintest idea at this moment whether I'm standing on the floor, the sides or the roof! Not a glimmer anywhere—nothing but the darkness of the Pit itself! From the 'feel' of it, I don't think that we'll hit too heavily. Hullo, here's Murdoch."

From the lightly-tapping footsteps and the awful language in the passage, there was little doubt as to the identity of the approaching person, invisible though he was.

"What in the name of Jupiter is this witch of Hell doing now?" demanded the peeved voice from the region of the doorway. It is regrettable to record that the old vessel scarcely ever received its baptismal name from the tough crew she carried. "I've been walking—or rather, bouncing—across doors and ports since I left here, and as I seem to have gained a little weight at last, I'm a mass of bruises in consequence! Where in Hell are we?"

Gene Hutton laughed. "That *may* be our location, for all I can tell you, Tony! We entered an atmosphere of some sort, and there's the slightest of gravity-pulls affecting us, as you seem to have noticed! I've checked her all I can, and now we're waiting until we hit something—notice the increased heat?"

Came a grunt from the blackness. "This is nothing to the power-room temperature. You're in the most exposed part of the ship here. I was just wondering whether . . . "

What he wondered they never heard, for at that instant there was a distinct lurch, a sensation of forward skid, then a few seconds later a heavy thud. Their still-light bodies

were thrown gently across the dark compartment, but not gently enough to prevent them banging their three heads against the hull with enough force to make them oblivious to all around.

CHAPTER II

THE RELIEF EXPEDITION

THE heavy, broad-shouldered figure of Malcolm Kennedy, Controller of the recently-established British branch of the Solar Exploration Department, bent for a long time over a long letter which lay on the desk before him. At another large desk across the room, almost submerged in sheaves of reports, data sheets, etc., his squat, blond-headed German assistant sat watching him. Josef Reinmur, somewhere about thirty years of age, was known in the S. E. D. staff-list as JR/133 Physicist, and was the close friend and helper of Kennedy, or Commander MK/527 in official circles.

The Britisher stood up suddenly and crossed the room with the letter in his hands. "Reinmur, old boy, just cast your eye over that—it's more in your line than mine, though we'll both be wanted for this business, I'm thinking."

The physicist studied the contents of the missive closely, and they were surprising enough:—

New York, Sec. 1,
S. E. Dept.
19th Sol, 2033.

To Commander MK527,
Sec. 3, S. E. D.
Northumbrian Airdrome, England.

I wish you to take up the matter of the disappearance of the space-vessel *Elemental*, which suddenly ceased communication at the hour of 15.10 today. This ship was on her return journey from Venus, and the last bearing given was: approx. 80,000,000 miles from Sun by 37,000,000 miles rear of earth, and apparently in the plane of the

Ecliptic.* She was under the command of GH2030 (see files).

The Commander had some tale about a black mass in space round about that point, and asked permission to investigate. That is the last heard of the *Elemental*, and she was due in to-morrow. We cannot guarantee the accuracy of the bearing given, as that vessel's new instruments had not yet been installed. The Research and Astronomical staffs are looking into the matter from here, but meanwhile you take your best ship—and a thoroughly efficient physicist; I suggest young Reinmur.

Any findings of the staff will be communicated by the s.w. radio-beam. Use that yourself if any further particulars required—but get away immediately!

MASTERSTON,
Controller, S.E.D.

The German laid down the letter and looked up at Kennedy, who was standing with an official file in his hands, and studying the contents. Reinmur spoke in his rather stilted English:

"It is that the great man seems annoyed, is it not so? And who is this GH2030? An Englander?"

"Well, an English-Irishman. Gene Hutton's the name, and I met the red-headed son o' Satan some months ago. Reckless young ass—that's why they gave him the old *Elemental* to fool about with. He's too dangerous to trust with one of the new space-vessels, even if they do call him 'The Lucky Genie!' Looks now as if his luck has deserted him at last, and left him stranded in Space somewhere."

Kennedy strode over to his desk, and picking up the airdrome telephone, got into touch with his chief engineer, an Englishman named Knox. To him he gave the necessary instructions for the preparation of the space-vessel *Atomite* in the shortest possible time. He sent a few

*Ecliptic—The imaginary plane of the earth's track round the sun. The orbits of the other planets are not quite in this plane, but vary a few degrees "above" and "below" it. Mercury the one of greatest variation.

queries over the line, then apparently satisfied with the answers he received, he rang off abruptly and turned to his companion.

"We should be away in a couple of hours, so you had better have a look at the instruments on the *Atomite*, and prepare any extras you think you'll need" He looked at his watch, ". . . . It is just 13.30 now, so we'll be away practically twenty-four hours after the *Elemental* lost herself. I've some work to complete first and I must radio Masterston. See you later, Reiny."

Reinmur nodded silently, and left the office with a sheaf of his beloved data-sheets under his arm.

"**W**ELL, Reiny, and how do we stand now?" asked Kennedy, as he entered the stern observation room of the *Atomite* some twenty-two hours later. "If this ship is doing all that was expected of her by the designers, then we should be somewhere near our jumping-off point by this time."

The German was seated peering into an ingenious little instrument of his own invention, which he called the "objective-diminisher," in which the apparent increase or diminution of an approaching or receding body in Space was utilised to give its distance from the ship and also the speed of the latter; this without elaborate calculations to worry the navigators. This instrument was trained upon the distant greenish crescent of the earth. Reinmur swung around in his revolving seat in order to face his visitor.

"Ja—that is just so. This ship—she has done five hundred miles to each second—*das ist wunderbar. Sechs-und-dreizig millionen*—ach, I am sorry! I mean that we have reached thirty-six millions of miles from the

earth, but our planet—she has gone another three millions of miles through the ether since our friend sent his last report. We are still at about the eighty millions from the sun, by my little instrument."

"Good. I came to tell you that there certainly is a black patch of fair size visible ahead—but not three million miles away, I guess; not by any means."

"Ah! Our friend Hutton—he did not romance then? Of course, this black lump in Space must be moving through the Solar System, or following the earth around the sun—is not that it? We must indeed see this phenomenon of the System."

The two friends hurried forward to the control-tower there, unhindered by clumsy movement, as the *Atomite* was fitted with the new Gravity-compensator—the lack of which caused so much trouble in moving about the missing *Elemental*. It had not been found possible to fully compensate for the missing earth-pull, but a compromise had been effected whereby its crew weighed about two-thirds of their normal weights when on earth. This was sufficient to make for easy movement about the vessel, by exercising a little care.

In the control-tower, Reinmur surveyed the purplish-black vista ahead, in the foreground of which was the immense inky ball blotting out the background of sparkling stars and suns. The physicist regarded this thoughtfully for some time in silence. It was rapidly growing larger as they approached at slightly moderated speed, and soon appeared to fill all the available space before them. A word from Kennedy to the navigator and the *Atomite's* speed dropped considerably. It was difficult to guess just how far they were away from the

fringe of the dark mass, as it now blotted out the sun and all the visible universe in front of them. The commander looked at his mass-indicator, a much more sensitive instrument than that of the old *Elemental*.

"Signs of something small near us here," he said in a puzzled voice, "but it's by no means in keeping with the size of that great ball ahead. Do you think this is a planet with a black, non-reflecting atmosphere?"

Reinmur shook his head. "*Nein, nein*—not quite that, my friend. I like it not at all—this is all so strange. The sun—his rays do not pierce that at all; nor do the beams of your fog-piercing headlights. It is one great mass—yet your instrument says practically no great mass near. Then what is it? What is this that gives no light, which no light can penetrate—which reflects nothing?"

"Well, I was rather expecting you to give us some idea about that. If the *Elemental* has gone into there, I don't wonder she's lost, with her old rotten instruments! I suppose we'll have to risk flying into this stuff in any event. Put her at it cautiously, Williams—I'm off to the radio cabin to give a report and our bearings. Let's hope it won't be our last! I'll be back in a few minutes to take over the controls."

FIVE minutes later, while Kennedy was still in the radio compartment, Reinmur and the Navigator gave sharp cries of alarm as the lights vanished, and they found themselves in the same state as the crew of the *Elemental* had been two days previously. The same Stygian gloom prevailed through the vessel, and her commander blundered his way back to the control-tower, after a hasty visit to the power-room. A few simple

tests with their flame-producers and electric torches quickly convinced them of the impossibility of producing any form of illumination. Then Kennedy seized the controls from Williams and attempted to steady his vessel, which had suddenly taken on a violent vibrating movement. Fortunately, Williams had shut off all power as the lights went out, and all the commander could do in the blackness was to attempt to regulate their gravity-resistor by the "feel" of his trembling vessel. As in the case of the *Elemental*, the increasing temperature showed that they were descending towards some body through a very dense atmosphere. The feel of the solid "floor" under his feet assured him that they were on a fairly level keel in relation to the gravitational mass below—whatever it was.

From the gloom came the murmur of Reinmur's deep voice, as he muttered indistinctly to himself, and Kennedy could visualize him standing there pulling at his left ear-lobe—a little habit of the German's when puzzled or thoughtful. Williams had found the settee, and stuck there, as he found it difficult to keep his balance in the absolute darkness and absence of familiar objects. It was impossible to guess how long that dreadful descent continued, as no one spoke, all three feeling numbed with the suddenness of it all.

Kennedy was steadily increasing their gravitational resistance every few seconds—an unnerving task in the dark, when any moment they might crash into something solid. After what seemed a long stretch of time, he judged that they must be near the surface of the hidden mass—if such existed. He decided to risk cutting out his resistance to the hidden pull which he assumed was acting

on them, although his own body felt no heavier. Several seconds later, to his astonishment and relief, the *Atomite* tilted slightly, stuck her blunt nose into something soft, and then skidded and wallowed to a standstill!

"Seems that we have struck the solid at last, Reiny! D'you know, I believe that this blessed old craft has been coasting along a few feet above whatever we're on, for the past ten minutes! Hutton's 'hole in Space' seems to have a fairly solid centre, at any rate!"

"Ach! Thanks to *der Grosse Gott!*" came the German's rumble out of the black void, mixing his languages as usual when much moved or excited. "This is the very Pit of Hell itself! But, as you do say, it is at the least something solid. What is next?"

"If I can get hold of Knox now, and we can find the inlet valve, I'd like to sample a little of the atmosphere outside. We may need our atmospheric suits before we can venture outside."

Some time later Kennedy and his chief engineer, having located their inlet valve installed for such a purpose, stood listening in the testing-chamber to the steady hiss of inpouring air. The exhaust fan was temporarily shut off while they risked the inhalation of the new atmosphere.

"Somewhat above atmospheric pressure," observed Knox, as he closed the valve after a minute or so. "I can't say that I notice any particular difference."

"It seems very warm and dry, but otherwise quite breathable. I'm beginning to believe that we may find what we're looking for down here," said his commander hopefully. "We cannot hope to see the atmospheric gauge under these conditions, but I think we can risk a small prowling

around outside, so long as we stick near the ship."

"You'll need to prowling by touch, then," came Knox's voice. "This infernal gloom is beginning to weigh on my eyelids."

AS the eternal darkness within and without their vessel rendered all instruments useless, there were no preparations to be made, and soon Kennedy, Reinmur, and Knox were passing through the double airlock exit of the *Atomite* to the unseen world without. When they reached the outer air, Knox could be heard fumbling at the open doorway.

"What are you fiddling about with there, Knox?" demanded the Commander curiously.

"Making sure that we get back to this spot," came the answer. "I'm fixing the end of a spool of fine wire to the door lever, so that we can unwind it as we go, and wander a bit further off that way—though what we can expect to find in this light-forsaken bit o' Space is beyond me!"

The remainder of the crew—four engineers and three pilots—had gradually found their way to the doorway, where they were to remain for the present, awaiting the return of their officers. With a few parting instructions, the three men set off slowly, blundering along in the intense blackness, which felt heavier than their own bodies to each of them. The surface beneath their feet they found to be very soft—so soft that they sank ankle deep into it, despite their relatively light weights.

Kennedy bent down to grope with his bare hands, and had his fingers trodden on by one of his companions for his pains.

"Confound somebody! This is damnable going. Feel the stuff under

you—what do you think it is like?"

Reinmur's heavy voice boomed out of the darkness. "It feels to me like—like very coarse sand—rough, warm—very warm lower down. It is that this is a volcanic planet, perhaps? The air—it is heavy and very close—my body, it is lighter than when on the ship. Do you feel that?"

"All that, Reiny, and more. I feel as if I could jump far enough, yet there's something weighing me down—I suppose that is the heavy air pressure. It certainly is breathable, but thick enough to choke one. This stuff underfoot must be rising like dust through our kicking about here. Got plenty of wire, Knox?"

"Nearly a mile of it. I wonder how long this stretch of desert, or whatever it is, is going to last? This is the first exploration I've helped in blind-folded, so to speak, and though it's hardly exciting yet, it's bad for the nerves—expecting any moment to walk into something, or over the edge into nothingness!"

"You would not drop very fast, *mein* friend, with this pull of gravity such as I feel now," as he ploughed alongside the Engineer, the German was beginning to blow hard. "I should think that the pull here—he is less than half that which the earth she exerts—that is to judge by how I do feel now; and I am the heaviest of this three, am I not? *Mein Gott*, but the heat!"

The mere gentle effort required for walking certainly had a rapid heating effect, dressed as they were in the fairly thick leather one-piece uniforms of the S. E. D. Knox, who was trying to keep in mind some idea of the length of wire he was slowly unrolling, at last suggested a change of direction. This was done, so far as they could judge in the gloom. The wire

did at least prevent them wandering around in circles, as one is liable to do in the absence of guiding objects. They had carried with them their pocket ray-lamps, designed for fog-piercing, but they were as useless as the ordinary torches. Each man also carried the latest patterned S. E. D. radite life-destroyer, a deadly little light-metal weapon of considerable range.

After slow but steady progress in silence for a time, Kennedy remarked: "If the old *Elemental* has landed somewhere on this—this planet, I suppose it is, the odds against finding her must be pretty heavy. What on earth can one do without any light, or means of using light? I don't remember whether I mentioned to you chaps that the radio ceased to operate about the same time as the lights failed. It seems that no waves of any kind, long or short, will operate in this black world. What does that suggest, Reiny?"

"*Ach*, who can tell? I have been thinking about this since we the earth left, but I would prefer that it should be discussed under better conditions than these. I find I need all my breath—you do not mind?"

"That's all right—I haven't too much wind myself in this thick air. I wonder if there's any life of any kind down here—if such could exist for long under these conditions? It seems absolutely barren so far. No vegetation—no buildings—not even water yet . . . My God! I'm going! Look out!"

Reinmur felt a frantic clutch as his companion cried out, then the ground gave way under his feet, and he was sliding into nothingness. Knox yelled out as he too slipped, and the wire reel was jerked out of his hands. The three men plunged over into an abyss

of blackness, falling slowly for what seemed an eternity, their senses reeling as they pitched over and over into the unknown depths

CHAPTER III

THE PLANET OF PERPETUAL NIGHT

GENE HUTTON sat up in total darkness with his head singing, and the only sound in the silence around him was the faint hum of the still-working ventilation fans of the *Elemental*. He found that someone had loosened the neck of his uniform during his spell of unconsciousness.

"Awake, Gene?" The voice of his Engineer coming suddenly out of the blackness rather startled him.

"Only just, Tony. Where the—oh, I remember! My cranium's buzzing like a bee from that knock I got. Elliot here?"

A groan from near-by answered his query, and somebody stirred within a short distance.

"Just coming to," said Tony Murdoch. "I don't think any of us bumped very hard—myself least of all; or perhaps my skull's thicker! Well, we're here, wherever it is I've had a 'peep' from the air-lock, and saw as much as I can see here!"

"Did you open the outer door—you lunatic?"

"Er—yes," admitted the invisible Tony, then added airily: "Quite safe outside, and you won't need the air-suits. Just a lump thicker than it is in here. The door is half-covered, as we've landed on our port side—and it's a good job it happens to open inwards!"

"Damned silly thing to do," commented Hutton. "You might have been

gassed, or dropped insensible from the lack of air."

"Well, I had to do something, as we do not happen to carry a testing-chamber on this defunct old wreck; and I believe she *is* a wreck this time! Feeling better yet? And how are you, Elliot?"

"Bit swimmy, but otherwise still whole, I think," said the Chief Pilot. Both he and his unseen Commander had risen stiffly to their feet, and were groping around the hidden walls of the control-tower.

"If you two are looking for the door, I'm standing by it now," remarked Murdoch. "Grab my belt Gene, and get Elliot in tow; then we'll navigate this confounded passageway. The cabin doors are now underfoot, so mind you don't trip!"

"Anybody else conscious, Tony?" asked Hutton, as they felt their way into the air-lock a minute or so later.

"That has been worrying me since I came-to. I can't open the doors of either the pilots' cabin or the power-compartment. They're jammed with the landing shock, I suppose, and the crew seem to be still unconscious."

"We'll look into that in a few minutes, then. I want to get some idea of how the ship is lying, and what she is lying on. Do you notice that we have regained some weight now?"

"Yes, but it isn't earth-gravity by a good way You'll have to crawl out of here on your knees—and keep your head up, or you'll go shoving it into the stuff we're resting on. I got a fine old mouthful of ground rock through this everlasting night! I've already tried all our varieties of rays on the darkness, but they're all useless."

One by one the three men crawled outside, and groped around the hull of the *Elemental*, which was certainly

canted over at a sharp angle to port, and was also half buried at the fore end in the soft, coarse surface on which she rested. So much they could discover by touch, but beyond that they were quite lost.

Elliot re-entered the vessel to make some attempt at rousing the rest of the crew, while Hutton and his engineer remained at the entrance, trying to pierce the heavy gloom weighing down upon them.

"I hear water!" said Murdoch suddenly. "Listen! Away to the right there."

Hutton listened intently for a few seconds, and then heard faintly the gentle lap-lap of small waves against an invisible shore.

"Come along, Tony—it's not far off. Got your ray-gun on you?"

"I have not; but I've my radite revolver, and I think that will be more use down here, if it's ever wanted. Rays of any kind seem to be at a discount, somehow," observed the Engineer, as they moved slowly and cautiously forward. It did not seem to occur to the two young fellows that there might be some trouble in finding their way back to the ship in the total lack of light, even though they did not travel more than a hundred odd paces before they found their object.

They drew up with the gentle murmur of the unseen waves at their feet, and bending down, they rather incautiously thrust their hands into the water. Both withdrew them hurriedly with sharp exclamations, as each felt a distinct electric shock shoot up his arms.

"Holy Jupiter!" cried Murdoch; "It's an electrified sea!"

"And as warm as tea," added Hutton. "I thought my chest was paralyzed! Infernally queer hole we seem

to have landed in—no wind whatever—no light—no sign of life . . . what's that?"

They stood stock still, hands on their revolvers, with ears strained. From along the invisible shore on which they stood came faint sounds of movement, and a muttering of voices, steadily approaching them. The murmuring grew to a confused medley of thin, high-pitched notes, and they became aware of numerous creatures of some kind within a few yards. With their death-dealing weapons drawn, the two Earthmen stood tense and watchful.

"Don't be too hasty, Tony," muttered Hutton, "These seem at least human, and may be friendly. I'll give them a hail . . . WHO GOES THERE?" he finished with a roar.

The murmuring ceased abruptly, and then a single treble-piping voice said something very distinctly, but utterly unintelligible to the Earthmen. Hutton replied quietly in English, whereat the babbling broke out afresh, drawing nearer every second. Then the two waiting men felt soft hands—or feelers, they could not tell which—running over their leather uniforms. Murdoch, his nerves jumpy, cursed heartily, and raised his arm in a threatening movement.

"Steady, Tony," said his friend quietly. "This is just their little way of getting acquainted, I take it."

At Murdoch's outburst, something soft and warm curled round his up-lifted hand, while another "feeler" gently stroked his arm in the darkness, and a plaintive piping near his left ear showed that one of the creatures was evidently trying to soothe him.

"Well," came Gene Hutton's voice, "they seem friendly and gentle enough. Pack your gun again, Tony,

and join in the stroking contest! I've got hold of something that feels like an arm, though it's not a hand that's at the end of it, and I'm patting away like a lunatic! If our crew could see us now!"

The patting and stroking continued for a time to the accompaniment of soothing voices, and the two relieved men joined in by returning the implied compliments—but they were thankful for the blackness which hid their acute embarrassment!

"THIS is a queer gang, Gene. They feel something like human beings, more or less. The little beggars are trying to pull me away with them!"

"I suppose they'll want to take us along and see—or rather, feel—their hang-out, whatever it is. We'll go, of course, but we must leave word . . . ELLIOT!"

An answering cry reached them from the Pilot, who was even then approaching in the everlasting night, to see what all the murmuring was about. The Commander warned him what to expect from their new friends of the strange planet, and for a few minutes the Pilot endured their caresses, and endeavoured clumsily to return them, thankful for once for the enveloping darkness.

"Murdoch and I are going on somewhere with these creatures," said Hutton at length. "I want you to get back to the *Elemental* and stay there—how are the men?"

"They seem to be all right, apart from bruises. They're busy forcing open the jammed doors now."

"Well, I leave you in sole charge of the ship—see that no one leaves her until we get back, except to walk round her to stretch his legs. We don't know yet what creatures may be lurk-

ing about here, so keep your radite-guns handy . . . *au revoir*, Elliot!"

The Head Pilot took his leave, and Hutton and Murdoch allowed their strange companions to lead them gently away over the coarse-grained sand. It was a queer experience, trying to walk steadily over ground they could not see, with their Earthian muscles trying to adapt themselves to the weak gravitational pull of this dark world. The unseen escort kept up a continual piping conversation amongst themselves—a language of sorts, which seemed to be composed mainly of series of short, sharp intonations in a variety of high-pitched keys. By touching the nearest of the creatures, Hutton decided that they would be about as high as his shoulder—and he was five-feet-nine inches in height. His interchange of "touch" with them on first acquaintance had indicated that they possessed short, plump bodies entirely without clothing of any description, and apparently, four limbs ending in what appeared to be three fingers with two tough membranes between them.

These characteristics were fairly easy to determine despite the entire absence of light, but Hutton's fingers did not tell him very clearly what their heads were like—except to indicate that in any light they would probably have been very ugly indeed. They appeared to be simply a mass of large lumps, with no trace of eye-sockets, a huge nose, and a pair of what he took to be still larger ears. Their skins were warm-blooded to the touch.

"TONY, have you noticed when cuddling our little chaps here how devilish ugly they must be? I don't think they've ever had eyes of any sort, and their heads appear to

have been inside beehives! I am afraid that their appearance in daylight would belie their kind hearts!"

"I noticed it all right," assented Murdoch rather glumly, "and it's a thundering good thing for them that there wasn't any light, or I'd have been shooting them on sight, I guess! It's p'r'aps as well they can't see themselves, or they'd go and drown in their sorrow at the sight We seem to have caused quite a sensation, to judge from their jabbering!"

It was quite evident that they had arrived at their destination, from the increased volume of the piping voices around them, and the renewed, tender touchings which followed as fresh members of the unseen colony "made contact" with them, as Murdoch facetiously called the introduction ceremony. They might just as well have been inside their own *Elemental*, for all the difference they could detect in the gloom. Hutton's discovery of the creatures' lack of eyes had shattered his hopes that they might use light of some kind in their dwelling-places.

Apart from the fact that they appeared to have left the hidden sea behind them, the two Earthmen trudged on in utter ignorance of their surroundings, and with only a dim idea of the numbers of the strange humans that accompanied them. A note of warning in the unintelligible speech which was being addressed to them made them hesitate. Then, guided by the gentle pressure of the webbed hands on their shoulders, and fumbling about in front of them with their own hands, they stooped and passed through a low opening in some solid structure before them.

"We'll have developed a sharp sense of touch if we get much more practice in this confounded inky world," commented Tony Murdoch,

as he allowed himself to be gently thrust into a sitting position on something soft. Groping about, he felt some kind of soft vegetable matter beneath him, like a pile of grasses or leaves, which were set on top of what seemed to be a block of stone, rough-hewn.

"Beats me how they live at all in this," said Hutton. "I suppose that their other senses will be super-developed or something to make up for their lack of sight and light. They don't seem to have progressed very far with their ideas of furnishing to judge by my seat!"

"I felt around that opening as we entered whatever we're in," observed the engineer, "but devil the sign of a door could I feel. This'll be the City Hall, I suppose!"

"From the queer sound and lack of echo, I'd say that it's a roofless one then. Might be a ruin . . . but listen to this chap!"

The babbling, high-pitched cries on all sides had suddenly ceased at the command of a clear, penetrating whistle; then something approached in the dark and laid a webby hand on each man's shoulder, speaking slowly and quietly in what was obviously intended to be a pleading and friendly tone. The invisible orator spoke at length to his two puzzled listeners, and finished the address by running his light hands down their arms to the finger-tips—a proceeding which made them feel creepy in the blackness.

"Tony boy, I haven't the faintest notion what it's all about, but I feel that we should return the compliment! Stand up and lay your ugly fist on this fellow's shoulder—if you can find it. Gently now, and don't frighten him! Ready? . . . then here goes."

THUS standing solemnly in the gloom, the two Earthians with their palms resting on the unseen creature's shoulders, Gene Hutton, Commander GH2030 of the S. E. D., replied in stately English to the untranslated "speech of welcome." It was perhaps fortunate for the tender feelings of those gentle humans that they could not see the two grinning faces before them—although Hutton put all his powers of oratory into both words and tones to convey the requisite atmosphere of amiability.

Apparently their hosts were satisfied with his friendly intentions, to judge from their pleased cries and friendly "touchings," which followed his effort. Even the rough Tony was impressed by the uncanny way in which the creatures managed to convey their feelings by varied tones of speech, and touches.

The speech-making finished, their little guides led them around the invisible building, where they were induced to exercise their powers of touch in an endeavor to gain some idea of their surroundings. Under the circumstances they learned little, except that the building seemed to be circular, or perhaps oval in shape, with four entrances but entirely without windows or any other openings. The air was about as close as that outside, and the same warmth radiated from the ground beneath their feet. By groping about on the floor, they found that it was the same sandy surface as that without, and without any artificial covering.

"Seems to me," said Hutton, "that these folk have a long way to go yet—or else they are a declining race. I don't think there is a great crowd of them, from the row around us—not more than a few score, I should say."

"I don't wonder at that," remarked Murdoch, "under these conditions. I suppose they've developed to suit this life, but much of this would drive me clean crazy! If you're interested, Gene, you had better stay with them a bit and learn their lingo—though that's going to be difficult without the help of signs. You'll have plenty of opportunity, to judge by the way the old *Elemental* has driven her nose into the ground!"

"By Jove, yes! We'll have to be getting back to her to see what can be done there. We don't seem to stand much chance of learning much in this eternal night, and the sooner we get out of it the better for us—although this is all very interesting."

Laying his hands on the leader of the creatures, who had kept in touch with them all the time, Hutton tried to convey by various pressures and unseen antics their desire to return to the ship, at the same time talking very earnestly. It was remarkable how readily their hosts seemed to grasp what was required, and conveyed their understanding in their usual manner. The two Earthians, however, were gently persuaded to partake of some cold, semi-liquid mess from a couple of bowls which seemed to consist of hardened clay. The contents of these were not particularly palatable, but they managed to dispose of the small sample, as they noticed for the first time how hungry they felt.

Later, after more talking—this time in sorrowful tones—from the creatures, they managed to break away, and were escorted back to the half-buried *Elemental* by a small number. They could scarcely have got back without them, and these guides, after prowling around the ship with many astonished pipings,

at last took their leave for the time being.

SOME of the crew had already been digging out the surface around the buried nose of the vessel, but to their dismay, found that she seemed to be sinking more as they excavated. There was no really solid ground beneath her, from which she could have been shored-up. The sandy or ashy soil seemed to extend downwards indefinitely, and the additional hindrance of the perpetual darkness only made operations more difficult.

"This is certainly a fine old mess to be in!" commented the Commander, when he had heard the worst. "We cannot radio—we might take weeks to get her moved, if at all! We have grub stores for a few days only—though we can always fall back on the stuff our new friends seem to live on!"

"Heaven forbid!" cried Tony Murdoch, with a shudder. "Gene, my lad, it's up to you to get acquainted with this lingo of theirs, and see what can be done about food. There might be some animal life which is eatable—assuming that we can shoot anything in this black hole. You leave the old wreck to me—I'm the engineer on this contract!"

"Well, we'll have to make the best of a bad job. I'll appoint myself chief interpreter, and I'll get on with it right away. I guess I can find my way back by the edge of that sea, and I can make plenty of racket on the way to let them know I'm coming. I'd like company, though, so you'd better come along, Elliot, and be introduced again! Make a good job of it, Tony!"

Murdoch grunted. "If you can guess the passage of a couple of hours, we might have some decent grub ready for you when you come back. See that you learn your lessons well! Cheerio!"

CHAPTER IV

LIFE ON THE DARK WORLD

MALCOLM KENNEDY, bruised and aching in every limb, sat up in total darkness and tried to collect his scattered thoughts. Gradually he became aware of several sounds about him—the soft scraping of someone moving nearby, and the thin piping of what he at last decided were human voices. Then he started at the sound of Josef Reinmur's booming bass somewhere on his left.

"*Nein, nein*, my friend, *das geht nicht*—that is not so! It is that this world, this planet, it is—"

"Hullo, there! What's all the argument about? And where are we now?" called out Kennedy.

"Sitting with our backs against the wall of some building or ruin," said Knox, his Engineer. "How are you feeling, Chief?"

"Just as if I'd been well hammered all over! How did we arrive here, and what's all the row around us? Surely there's no . . . ?"

"From what I see—or rather, hear—we're in the hands of some gentle, friendly creatures. Reinmur can tell you more about them than I can—he's been conscious a long time, and been prowling about getting quite pally with them."

The German's voice boomed forth again: "My friend, I am glad to hear that you are not hurt too badly. I think we have all three been very fortunate. I remember faintly that we finish our falling suddenly—yes, and painfully! Me—I did not quite lose the consciousness—no! I lie, all stunned, quite a long time—how much, I know not. Then I hear faint noises, and something come out of the great blackness and *stroke* me—like gentle hands. Then I hear the

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noise that you now are hearing—like squeaks or tiny voices. A large number of soft arms lift me up and carry me here; and you two also."

"Any notion what these . . . things are like?" asked Kennedy in wonderment.

"Quite a little bit, by touch only. To me they seem blind, puny, and—grotesque creatures. Their intelligence I can not estimate, but they seem a type of language to have, and they are not—what shall I say?—are not opposed to us. That is all."

"H'm. There doesn't seem to be very many of them," commented the Commander. "Are we prisoners, then?"

Here Knox's voice broke in: "There I'm puzzled. I made some attempt to get them to understand that I wanted to be led back to the bottom of the cliff, or whatever it was, where they found us—and I rather think that the little beggars understood. However, one of them made a long explanation, of which I knew not a word, and made me be seated again—all in the friendliest manner possible. Then I heard some kind of orders being given, and I think that some of them trooped off somewhere on a message of some sort. I wanted to get back to see if the wire reel was hanging near where we landed up, but as they were so persuasive, I thought I might as well wait until you recovered."

"Queer," murmured Kennedy. He suddenly let off a yell into the gloom, and instantly some of the unseen creatures were at his side, and laying their soft webbed hands on his head and shoulders. Having attracted the attention he desired, Kennedy groped about before him, talking quietly in English all the time. At last he had by touch gained a fair mental vision of what his captors might be like, and

forthwith delivered a speech in which he tried to convey, as Knox had done, that he wished to return to the scene of their mishap. His eloquence appeared to be lost, as the only result was a gentle pressure on his shoulders, making him remain seated when he tried to rise. A long volley of high-pitched speech was also fired off at him in return, delivered in a pleading tone. At last he gave it up in despair, and was consulting his two friends as to the advisability of making a breakaway, in a forlorn hope of finding their way back to the *Atomite*, when there was an outbreak of cries from their unseen hosts, and a lot of scraping and running about in the gloom.

"Some more of them approaching, I think," said Knox. "Likely the crowd which went off some time ago, while you were in dreamland, chief. These little devils seem to make up for their lack of sight by making as much row as possible when they meet, and then pawing each other about to make sure who's who!"

A number of creatures approached the three men as they sat on the warm earth waiting patiently for the next move.

Knox groaned loudly: "More speechifying, I'm afraid!" But he sat up with a jerk as an English voice issued from the blackness above his head.

"Who's that speaking? This is Hutton, of the Earthian S. E. D. space-flyer, *Elemental*, at present wrecked in this light-forsaken bit of Space!"

"Good God! If it isn't the Lucky Genie himself!" yelled Kennedy, struggling clumsily to his feet. "This is Kennedy speaking, of the good ship *Atomite*—and we came here in search of you, Hutton. Give us your hand,

and I'll make the intros. by touch. Here is Knox, my Chief Engineer—feel him over!—and this is our physicist, Reinmur . . . you'll have heard of him."

"And this is Elliot, my Chief Navigator, beside me," said Hutton a little later. "My chief mechanic is at present 'coloring' the atmosphere around the old ship, and the more they try to dig her out of the soft surface, the more she sinks into it! I'm afraid she is hopelessly stuck. By Jupiter, Kennedy, but I'm right glad to meet you . . . listen to those little devils around us! They seem as pleased as we are."

THE frail creatures of the dark planet were all this time running about and chattering incessantly in their piping voices, obviously highly pleased at having found two sets of their strange visitors, and of having brought them together again.

"Tell me, Kennedy, what earth-day is this?" asked Hutton after the first excitement had abated a little.

"It was late in the twenty-first day of Sol, by Greenwich time, when we stumbled into this black mass; and I don't think we've been here more than a few hours at most."

"Good Lord! We seem to have been here ages—and it's only two days or so since we dropped here! D'you know, Kennedy, that Elliot and I have been trying all our time here to get the hang of this twittering language of these queer little fellows? I must say we have done wonders, too. One of them seems to have appointed himself our tutor when he gathered what we were after, and we can already get the drift of each other's meanings by nudging and stroking, and almost singing the queer babbling you can hear around us now!"

"Good," said Kennedy. "You are the very man we want. I've been trying to get the notion into their heads that we want to get back to the *Atomite* for a time, as my crew will be growing anxious about us."

Reinmur's deep voice broke in: "My friend, I would like a little time here to stay, to acquaint myself with these so strange people. Perhaps you can to the ship go, and for me you return later—is that not so?"

"That could be done all right, Kennedy," interrupted the voice of Elliot. "My chief can go along with you and Knox, and I'll stay and help Reinmur here—though I can't claim to be a real interpreter yet."

With some difficulty, it was conveyed to the inhabitants of the strange world that they should act as guides to the place where the three men of the *Atomite* had been found. From there, it might be possible to find the wire trail leading back to the vessel. The German being evidently intensely interested in his new surroundings, it was agreed that he and Elliot should remain for purposes of investigation, while communication was being established between the two stranded space-vessels.

Despite the evident willingness of their kindly little hosts to help them in any way, Reinmur and his companion found their efforts at exploring their surroundings sadly hampered by the everlasting darkness. This indeed, was so intense that it seemed to have weight, pressing down upon them like some tangible matter. The dead blackness of it so hurt their eyeballs, that they found it much more comfortable to move around with their eyes closed—a circumstance which Elliot had long ago discovered. Furthermore, progressing in such a manner, it seemed to them that their

senses of touch and hearing had already become more acute.

THE German was particularly disgruntled because of the impossibility of using a notebook to record such discoveries as they did make under the adverse conditions. There appeared to be four of the inhabitants guiding them along, and because of the light gravity-pull, the two Earthians moved easily and rapidly over the soft, rough surface under their feet. The heat was a nuisance, although they had loosened all possible parts of their leather uniforms, and the source of it interested Reinmur considerably.

"The surface appears to be like this everywhere," said Elliot, in reply to an enquiry from his companion. "Though, of course, Hutton and I have not travelled very far. We have come across some outcrops of rock, and some tracts of vegetable growth. We have met no other creatures but these, and Hutton thinks they are vegetarians."

"Ah! This vegetable matter—I would like some samples to take back to the ship. Our guides, they can take us to it? . . . *das ist gut*. Also, I will samples take of this soil, and perhaps a few stones to examine. This heat—it is that it comes from this planet, I think. The crust, it very thin must be . . . and you say there is a warm sea near, the water of which electrify you! *Ach*, indeed, it is one strange planet—with this thick gas around which we can breathe, yet no light will show anyhow. . . ."

The German continued to mutter to himself as they proceeded on their quest, pulling continually at his left ear-lobe as he meditated on their peculiar environment. Soon they felt the brushing of some invisible growth

about their knees, and stooping, Reinmur pulled off some fronds of the plants and stuffed them in his capacious pockets.

"I gather that these folk live on this stuff," remarked Elliot. "Hutton and I have sampled some of it, and it nearly poisoned us! They mix it with some liquid, mash it up, and swallow it cold. We haven't been able to find whether they use heat for cooking in any way, but it seems unlikely."

"There are not many of these creatures—no?"

"It seems not. We have only found two communities so far, and they don't seem to have progressed very far. There seems to be but a few hundred in each crowd, and they apparently live in old ruins."

"*Ach!* It is not to be wondered at, that. I can see it all—the so pitiful struggle to live against these terrible conditions. The animals, if there have been any, they prey on these timid creatures—then perhaps they die out at last. These people, they just struggle along in this world of ever-present darkness, but cannot make the headway. They remain so simple, like the little children—they cannot know of the universe without—with no light, my friend, where is the knowledge, the hope? You have tried to make them understand from whence we come?"

"We have, but they are still puzzled," admitted Elliot. "We have had them at the ship, feeling around her. It excited them, but I'm afraid they cannot grasp how we came from the blackness above them. Probably think we are some sort of gods."

THE two Earthians spent some hours in prowling about with their four guides, examining the ruined buildings, relics of some great-

er human age than the present. About them the small creatures passed to and fro, gathering stocks of the unseen plants from the vegetational tracts. Outside of these tracts there appeared to be nothing but barren desert lands, with occasional rocky outcrops. Once they came across an unseen river of fresh water, quite drinkable, which flowed to join the electrified sea. Reinmur tested the latter for himself, and the few drops he tried made his tongue tingle, but did not appear to be briny. The imaginative German was appalled by the conditions of existence under which the poor creatures strove. He there and then registered a mental vow to return to help them in some way, supported by a fully-equipped fleet of vessels. Fortunate indeed for his sensitive mind that he could not see into the near future!

They had returned to the round-walled buildings where Hutton and Murdoch had previously been "entertained," and were preparing to take their leave before returning to the other community, when there was a shrill whistling without, accompanied by high-pitched screams of alarm. The two Earthians started to their feet, and Elliot endeavored to find what the trouble was by questioning the nearest guide. The poor creature was almost inarticulate with terror, but Elliot managed to distinguish their word for danger, just as the building became filled with the fleeing folk.

Demanding that he be shown to the entrance, Elliot was unwillingly drawn thither by the guide, followed closely by the German. Both Earthians had drawn their radite revolvers, and they found that they had the doorway to themselves. The screams had died down, and in the ensuing

silence they stood motionless, listening to a strange scraping sound some distance away, in the direction of the dark sea.

"That sounds like a mighty heavy body dragging over the shore, and it's making inland," murmured Elliot. "Some beast of prey, I suppose. Feel this opening, Reinmur . . . got it? Well then, I think that if we fire straight ahead at right angles to this entrance, we might hit something. We can't see if we do hit, but I've no doubt we'll hear something . . . ready?"

Reinmur grunted assent, and they opened fire into the black void before them. There was no familiar spurt of flame from the guns, but the sharp, short cracks assured them that they were in order. Something huge was blundering about on the ground not far away, but for some time there was no result, and the noise drew steadily nearer. It was an unnerving experience, banging away at an invisible target.

"A little more to the right, I think," muttered Elliot.

Their shifting of aim brought instant results in the shape of a couple of great crashes, as the two radite explosive bullets found their target. The resulting rush of hot air blew them off their feet, amidst a chorus of shrieks from the terrified creatures in the background.

"Holy smoke!" gasped Elliot, as he stumbled unsteadily to his feet. "I know radite is a pretty high-power kind of stuff, but there's something queer about that explosion!"

"*Mein Gott!* It is that you are right. This radite has never blow up like this before—and did you not notice? There was one big crash, but not one little bit of light or flash!"

"I noticed right enough," was the

grim answer. "Well, there's no sign of movement out there now—suppose we go and look?"

A FEW dozen paces away, they first encountered a strong odor of burnt flesh, and soon after stumbled over some pieces of the same stuff. A little groping about, and they found large pieces all over a wide area, and to the touch some of it seemed to be portions of large fins from some great fish.

"He has been the—how you call it?—the—the amphibian. Yet another terror for these helpless people to watch against! This it is which eat up all these creatures, one by one. Ask!"

The small inhabitants had by this time approached the dread spot, and in fear and trembling tried to follow and answer Elliot's clumsy attempts to question them about the late animal's habits. As Reinmur had surmised, the brute had been an amphibious preyer on the natives, levying toll of them like some great dragon of old on earth. Furthermore, there were several of the great sea-monsters, which sometimes made their raids in groups and sometimes singly, as the poor land-creatures knew to their cost. The latter appeared to have no means of defending themselves from such depredations, and had long since become accustomed to simply accepting the dangerous menace from the ocean as inevitable.

"And as a result of this little affair," added Elliot, "they tend to look upon us as gods more than ever. They Hullo, somebody's heard the racket!"

He broke off as distant shouts were heard along the shore, and he could recognise his Chief's voice, accompanied by the roar of Tony Mur-

doch's bull-like tones. Both the *Elemental's* and the *Atomite's* Commanders and Chief Engineers came hastening to the scene, followed by about half the former ship's crew. Explanations followed, not to mention considerable conjectures on the reason for the unexampled explosion which had arisen from two tiny radite bullets. Josef Reinmur had already drawn his own conclusions, but decided to let the matter rest for the time being, as he was in no mood at that moment for discussion. As the bits of the giant sea-monster were of no use to the natives, the gallery crew of the *Elemental* helped themselves to a few samples with which to experiment, and the rest was returned to the sea—not quite as it had left it earlier, as Murdoch remarked!

CHAPTER V

THE DEPARTURE—AND STARTLING NEWS

"D O try to be reasonable, Reiny!" protested Kennedy. "We have been lying here quite long enough as it is. I can only make the wildest guess at the passing of time, but as we've had two rounds of sleep, it must be about the 23rd of Sol by Earth-time. We have stores for scarcely twenty-four hours, so it's time to be moving. I for one have no wish to fall back on the ghastly concoctions these folk eat!"

"I was thinking of staying on alone for a time," murmured Reinmur. "Then it is that you could for me return, *nicht wahr?*"

"Now listen to me, old chap. I know that this place rather fascinates you, and that you sympathise with these creatures—but do you think you could stand weeks of this damned

darkness, and alone? I'm pretty sure that no one else is keen to stop here any longer. Besides, if you return with us, and think over the theories with which I'm sure your head's buzzing, you might be able to devise some ray which will actually penetrate this mysterious bit of Space. Then, you could come back fully equipped and stay as long as you wish."

The German was silent for a time. The two men were sitting on the warm ground near the hull of their vessel, discussing the preparations for their departure which were going on around. It had been found that there was a large stretch of comparatively level surface between the two ships, which lay about fifteen hundred paces apart—they had to measure every distance by pacing it, under the circumstances. The vessels had been linked up by Knox's reel of fine wire, and this served as a guide for those passing to and fro between the two craft. The *Elemental*, on account both of her helpless position and her age, was being abandoned, and her most valuable instruments were being moved on board the *Atomite*, together with the food-supplies. The motors which developed the repulsive magnetic field for anti-gravitational purposes, and which were situated in the lower parts of the ship, had been found to be useless for getting her out of the fix she had dropped into.

Handicapped as they were by the lack of light, Reinmur, Hutton and Elliot had covered a large area in their explorations, guided everywhere by the delighted natives. The German had got it into his large blond head that the poor creatures were looking to the Earthians to protect them permanently from the attacks of the giant amphibians. Kennedy admitted that it was certainly going to be dif-

ficult to get away from the now devoted people of the dark planet, without throwing them into the depths of despair. They quite evidently looked upon their visitors as gods, with omnipotent powers, who had come from the great darkness above to reside with them for ever. They were like children wanting protection from the Unknown, and had already sensed what the preparations for departure meant. They had begun to plead in their pitiful way with Hutton and Elliot, who dimly understood what the German in his wide sympathy had already sensed.

After a long silence Reinmur said slowly: "Is it not possible, my friend, that we should take one or two of these poor creatures away with us in our ship? I should like to see them in the light and under conditions of the Earth."

"Well, I dare say that could be managed. We could take a couple up above this black envelope for a trial trip, if you wish it, and see how they stand it. I'll see Gene Hutton about putting the suggestion to them. He has managed to get a fair working knowledge of the twittering they call a language, and might be able to make them understand."

WITH infinite trouble and patience Hutton and Elliot were able to convey the idea to the leader of the nearer community, and great excitement it seemed to cause amongst them. Finally it was decided that the leader and one other should board the *Atomite* for the experience, terrible to them, of being lifted up off their dark world. The members of the two communities apparently turned out in force to listen to the take-off, to judge by the multitude of tiny pipings which filled the air in the vicinity of the ves-

sel. Having warned the inhabitants to stand well clear, and assuring them of an early return, Hutton boarded the vessel last of all. The two timid passengers were safely seated in the commander's cabin, where the roar of the new electronic propulsive equipment was but a dull murmur.

Gradually the *Atomite* lifted under the steady repulsive power of her anti-gravitational barrier, but guiding her in the intense gloom was a ticklish matter. It was only when Williams, the Chief Navigator, who was at the control-switches, began to feel dizzy that he realized the ship was spinning horizontally about her vertical axis. There was always a tendency for these early space-ships to spin thus when taking-off or landing, but this could usually be countered by judicious operation of the controls—when her pilot could see anything around him. In this Stygian night it was hopeless to tell what the vessel was doing, except that her steady lift was noticeable to her crew, by the increased weight they felt due to the rapid acceleration.

The rising of the floor under his feet showed Williams that he had at last succeeded in getting the blunt nose of the ship tilted upwards, and he felt safe in starting the propulsive gear into life. It was a terrible feeling, standing there in the dark control-tower, pressed back by the acceleration against the padded back-rest provided for the pilot, and hurtling onwards and upwards unguided by the familiar germs of the great Universe.

In Kennedy's cabin, he and Hutton were having their work cut out in trying to soothe the terrified passengers, who were whimpering and clinging to each other in fear of the strange sensations which they experi-

enced in the *Atomite's* rush upwards.

In the power compartment the two chief engineers, once more on common ground, were arguing about the behavior of the vessel. Knox had posted Murdoch at the main lighting-switchboard, where the lighting-dimmer controls were also situated.

"We're going to need those dimmers soon, I'm thinking; so be ready, old chap—or we'll all be blinded when our lights return! Use the resistances at the first faint glimmer."

After an interminable waiting period, which made the pilot wonder whether they were describing an orbital path around the dark planet, the human freight of the *Atomite* began to feel that the heavy gloom was really lightening. Then gradually the powerful cold-light globes of her lighting equipment began to glow with a reddish light, changing swiftly to yellow. Fortunate it was for the Earthians aboard that there was a man posted at the lighting-dimmers! Murdoch swiftly reduced the illumination to a minimum as the transition from appalling blackness began to pain his eyeballs. Everyone throughout the ship experienced acute discomfort as their pupils, having been fully distended for several days, attempted to cope with the first onset of the light, feeble though it was. Long unused eye-muscles had to be brought into play again, and the effort was decidedly unpleasant!

Glancing out of the nearest circular port, Kennedy realised that the surrounding universe was again visible, but he could not bear to look upon the distant sparkling points of light for some time. Later it was possible to increase the illumination slightly, and the Commander made his way to the control-tower, where he found his pilot had left the con-

trols set for the ship to forge straight ahead, while he bathed his tingling eyes in a small hand-basin.

A sharp glance through the thick glass observation ports told him that they had emerged from the black ball behind, on the side further from the sun. Williams said that they were making a bee-line for Mars when he managed to get the use of his eyes, with the earth rolling away on the port side. Now, Mars was away to starboard, and turning to behold the earth ahead, Kennedy stared in amazement. The greenish-hued earth-and-moon system was certainly in view, but the apparent size of the planets rather startled him. His last view of the mother-planet had shown a three-quarter crescent apparently two inches across, but now the earth looked distinctly larger—and they had just left the black confines of the dark planet a few minutes before! With a hasty glance at the automatic earth calometer, which recorded the passage of man-made time on the home-planet, he called down the voice-tube for Reinmur to join him.

"Was the earth that size when you first saw it?" he asked the navigator, who had now regained full use of his eyes.

"Practically. I was thinking of calling you when my eyes gave trouble, so I thought that it was merely my distorted vision."

"H'm. Thank goodness the sun isn't in sight yet, or we *would* be blinded. We'd better keep in the shadow of this mass for a time, so slow her down considerably."

R EINMUR entered the control room hurriedly, and Kennedy silently pointed forward. The purple-black of Space, spotted with distant suns, seemed bright after the heavy

blackness behind them, and the German half-shut his eyes as he peered out.

"*Mein Gott!* What then is this speed we are doing?"

"Roughly half-maximum."

"*Donnerwetter!* There's something strange about this here! I must examine through my objective-diminisher at once. Have you asked the Headquarters for a radio distance-check?"

"I'm just off to the radio room to do it now. This new planet of ours is overtaking the earth, obviously. I'll go and give the S. E. D. Headquarters a shock!"

Reinmur, already seated at his distance-determining instrument, nodded absently, and the commander left the room. Within a few minutes the German had their approximate position figured out, and was rising to leave when Hutton's voice rang out from the voice-tube.

"Reinmur! Come back to the cabin at once! There's something wrong with our passengers!"

A few seconds later he was bending over the two unconscious figures of the little people of the dark world. In the increasing artificial light of the room, the two creatures presented a grotesque appearance, with their colorless naked bodies, webbed fingers and feet, over-developed ears and noses, and total absence of eyes. He examined their skin carefully, finding it dry and flaky to the touch, whereas on their native planet it had been warm and moist. Their breathing was little quicker than it had been in their own environment. For some time restoratives were tried in vain; then Reinmur swung round as Kennedy entered the room.

"We must go back at once!" he cried excitedly. "These two creatures

—the light is harming them; perhaps killing them—who can tell?" Then turning abruptly on Hutton, he asked: "Did they complain when the light returned here in full?"

"They certainly made noises of distress, and began to rub their skins, and made pleading motions with their arms; but I didn't tumble to the trouble."

"It is the light rays! These—they are not made for the light—they will perish in it!" He jumped across the room and switched off all the lights but one small globe. "We cannot take them with us, so we must return them to their people—otherwise we murder them!"

Kennedy sighed. "Confound it! I suppose we must do it, for common humanity's sake. I'm not anxious to try landing on that damned globe again—probably miles away from their living places. I'll have to radio a fresh report, and then I'll take her back myself."

THEN followed the most dreary part of the whole venture, as the *Atomite*, after several false landings—sometimes on the surface of the unseen sea—at last found safe ground, and unloaded her crews and passengers. By firing off their radite guns and generally making an infernal din on the quiet surface for several hours, the inhabitants some miles away were at last induced to locate the ship. The two unfortunate creatures soon recovered in their natural surroundings, and Hutton and Elliot had another bad half-hour or so trying to explain matters by touch and fragmentary speech. The two interpreters were by this time so weary of the whole affair that they did not much care whether they were really understood or not, and at

long last the space-vessel once again took off from the invisible planet for a rapid return to Mother-Earth.

"There's serious trouble ahead, Hutton, my lad!" said Malcolm Kennedy, over the remains of a meal of which he had partaken in his cabin in company with Reinmur and the commander of the late *Elemental*.

"For us, do you mean?" asked Hutton lightly.

"Well, I expect you'll get a chin-wagging over the loss of your ship—but that's not what I mean. Before we were interrupted by the collapse of our little passengers, and had to return them, Reinmur and I had found that we were a long way nearer the earth than we expected on coming out of that black lump behind. Reiny made the distance to be about thirty million miles, whereas we were over thirty-six million away when we entered the envelope of the dark planet! I got into touch with Masterston by radio, and he said that the astronomical staff have found the black mass since we sent our last bearing over fifty hours ago. They have plotted out the probable track of the planet, and it's going to pass uncomfortably close to old Mother Earth!"

"H'm. Did he give any particulars?"

"No. Mentioned that they traced the black ball with the aid of that new super-magnifier of Dr. Davidson's, and have been watching it while we were inside of it. They have also found that it is steadily gaining on the earth—as we know ourselves, it has gained six millions in over two days. There's a conference at Headquarters now on the matter, and we have to land near New York before passing on to England. Heavy static interfered at their end at that

point, and we had to abandon further messages; so I've left the operator watching the set for any further information."

Reinmur was standing at one of the circular observation ports, gazing back in the general direction of the fast-receding dark world with its Stygian envelope. The *Atomite* was now shooting like a meteor through Space in the direction of the greenish, three-quarter crescent of earth, which was being overtaken at the rate of just under 500 miles every second. The great black ball behind had now merged into the surrounding darkness of Space, and could only be detected by the absence of certain familiar constellations which its bulk concealed.

"Ach! This I do not like," muttered the German, swinging round, and returning to the table. "Herr Masterston—he did not give you any message for me?"

"Not directly, Reiny," answered Kennedy. "Just the orders for all three of us to drop into New York for a time, to make our reports. Is yours ready?"

"Not completed yet. I have yet to develop the photographs of our two late passengers which I took, but there are over twelve hours to go yet," observed Reinmur, with a glance at the calometer. This little instrument indicated the Greenwich Mean Time of 16. 15, the 23rd day of the month of Sol, 2033.

"Yes—we should get down some time between twenty-two o'clock and midnight, by the American chronometer—that depends on the state of the atmosphere around North America, of course. . . . Well Reiny, we'll have to get our papers in order again, I suppose, and you, Gene—I suppose

you're preparing your little tale of woe?"

"It's ready. We'll certainly give the Big Noises something to talk about when we return! Now, if you two don't mind, I'd like to lend a hand with your reports—I may be able to help, as I was prowling about there twice as long as you. Besides, I want to hear you two experts holding forth on the little matter that seems to have arisen; you've whetted my curiosity!"

"Good. We could do with your help. Let's get down to it before we snatch a few hours' sleep—we'll need that before we land, because those beggars waiting for us will keep us up all night until they know all!" And Kennedy and his two companions settled down to collect their varied assortment of facts and discoveries on the dark planet.

CHAPTER VI

THE DANGER—AND THE REMEDY

THERE was a long pause in the private sanctum of Masterston, that autocratic head of the Solar Exploration Department, and to conceal his uneasiness, Gene Hutton gazed curiously at the high walls of the great room. These were for the most part hung with huge-scale charts of the Solar System, and enlarged photographs of the various planets, together with several recently-added prints of scenes on the newly-explored planet, Venus.

The five men seated around the enormous circular table in the center of the room gazed silently at the long, broad back of their superior, who, after striding to and fro over his thick, expensive carpet, had paused before one of the charts,

which he was regarding with knitted brows. Hutton, Kennedy, and Reinmur were seated close together with papers before them. Next to the squat figure of the German sat the shock-haired, beetle-browed Dr. Davidson, head physicist of the S.E.D., completely lost in his own reflections at that moment. On his right-hand side, also very thoughtful, was seated the S.E.D.'s chief astronomer, Marcus White, a thin, keen-looking individual with thinning hair. All six men were attired in the one-piece, thin leather indoor uniforms of the great corporation which they served in their various capacities.

The big figure of the Controller swung round suddenly, and his keen, dark eyes roved over the five waiting men at the table.

"It is a strange tale you have told us," he remarked in a deep voice, addressing Reinmur and the two commanders, "and your conclusions, Reinmur, coincide with those of these two gentlemen—" he indicated White and Davidson, who awoke to their surroundings with a start. "It seems that there is no doubt that this dark planet of yours is to approach us even closer than you, Reinmur, anticipated. The main question is: what exactly will happen then? We are not certain, by any means, of the mass of this little world, apart from your guess made from the slight gravitational effect which you three experienced. As it reflects no light, we cannot deduce the mass from this point of observation. Your deductions lead us to expect a considerable disturbance of the earth in its orbit. . . . I leave it to you, White, to explain our conclusions to these three gentlemen."

White arose from the table and crossed the room to the big chart, which was a drawing of the sun and

minor planets of the Solar System. Reinmur followed him.

"I agree with you," said White quietly, "that we may expect the earth to be overhauled in ten days, or less—as the rate of approach may increase as the two planets near each other, due to the universal gravitational law." He pointed to the chart. "Here you see we have plotted out the probable track of this dark world, which is exactly in the same orbital plane as the earth. The small planet, which was barely eighty million miles from the sun when you landed upon it, and eighty-one millions from it when you left it, is describing an arc which will bring it within the earth's outer gravitational field. Matters are made worse by the fact that our planet is roughly midway between aphelion and perihelion,* and therefore swinging in towards the sun at increased speed every hour. Were the two planets to meet a few days later, where their tracks cross, then we should have no alternative but to completely *destroy this dark world* before that could happen! As it is—"

Reinmur started. "What is that you say? *Destroy this*. . . ? But, my friend, how are we to do that without ourselves being involved?"

White smiled at his astonishment. "Dr. Davidson will tell you all about that soon—he is the physicist. . . . but to finish what I was saying: As it is, the little world will come between us and the sun, and then. . . ?"

"Ah, then," said Reinmur, "then will be a great battle! Then we get another moon, or two planets which will revolve about each other somewhere within the earth's old orbit! The earth, her seasons they will be

*Aphelion & Perihelion—maximum and minimum distance from the sun respectively, due to the elliptical orbit.

all upset. There will be solar eclipses so very often, visible all over the earth—this planet she will be in shadow often. . . ." He paused in dismay, as the dire consequences dawned upon his mind.

HERE Masterston interrupted with, "Exactly! That is the trouble, Herr Reinmur! Imagine another moon, which we estimate at over thirty thousand miles across the black envelope you described, circling the earth in the plane of the Ecliptic! Regular—*too* regular!—solar eclipses every few days, for these two planets would revolve about each other at great speed at first . . . and God knows what will happen to the present moon! Imagine a series of eclipses with the sun completely blotted out by that great mass—the losing of our atmosphere's heat into Space for a time—the effect on animal and vegetable life down here—the terrible cold! Oh, I know, Herr Reinmur, of the sympathy which those poor devils have aroused in your heart—you could not hide your feelings as you described them! But—it is the lives of those paltry few against the millions on this planet!"

"Could we not wait and see?" interjected Hutton, whose sympathies also lay with the creatures of the disant dark world.

"Certainly we could wait!" cried the Controller. "But it would be too late! Here, Davidson—tell them all about it!"

Dr. Davidson turned in his chair to face his companions.

"I do not propose to go into details," he said mildly, "but I may say that it is a curious fact that your experience on that dark planet is an illustration of my basic idea. By that I mean that I long ago discov-

ered, that while the unknown medium which we call Ether is accepted as permeating all Space, it does not necessarily follow that it is present within the atom itself."

Reinmur jumped at that: "But, *mein Herr*—"

Davidson smilingly held up his hand. "I know, I know," he said soothingly. "I had all the usual arguments hurled at my head when I suggested it! However, starting with that basic idea, I have succeeded in not only releasing the energy contained in the molecules of certain compounds—not, mark you, in the atoms of certain elements*—but have been enabled to control it! You, as a physicist, will realise what that means, and also why we talk so easily about the destruction of the dark planet. No one outside a few of the S. E. D. staff knows of this discovery yet, because the force I can liberate is so tremendous and difficult to handle in terrestrial matters, that a practical application has not yet been found for it. You will realise, therefore, that if the approaching world is to be prevented from interfering with the normal course of life on this earth, it must be checked or destroyed before it is too near, as the resulting disturbance would do the earth considerable harm."

There fell a short silence in the room while the occupants mentally digested the scientist's explanation. The chronometer above the doorway registered the time as being 1. 30 a. m., local time. They could hear nothing of the perpetual roar of the aerial and street traffic which con-

*N.B.—The atom is the smallest particle of an element. The molecule is the smallest particle of a compound. For instance:—two atoms of hydrogen combine with one atom of oxygen to form one molecule of water, which is, of course, a compound.

tinued outside day and night without cessation, as the sound-proof room was well-insulated.

“YOU said—‘checked or destroyed’, I think,” observed Reinmur at last. “Is it that you think you could fend off the small planet, then?”

“That I cannot say yet. That is certainly what I shall attempt, as I have no wish to destroy unnecessarily, but I cannot help thinking, from what you have told me of this planet with its strange envelope of perpetual blackness, that it is going to take all the power we can command to reach the planet-core itself. This dark planet of yours is like my conception of the atom in some ways—it is quite possible that it has an unseen satellite revolving about it within the limits of that encircling blackness.

“What you have told me, Reinmur, seems to indicate that you have actually been on a magnified version of my atom, and the total absence of light and uselessness of our various ray-machines, seems to point to an entire absence of Ether—in short, an Etherless Zone in that part of Space!”

“That is all very well,” broke in Kennedy, “but if there was no Ether there—the cement of the Universe, as somebody has called it—how did the planet hang together—or even its atmosphere exist?”

Doctor Davidson shrugged his shoulders. “You know as well as I do that opinion on the existence of the ether is still sharply divided. More than a century ago, Lodge was booming his ether theory, while Dr. Steinmetz insisted that such theories were entirely incorrect. I have shown the possibility of using the energy of certain atoms, but I am not one step

further towards establishing the existence or non-existence of the ether—although I have hitherto assumed its being the invisible medium for the propagation of light and heat rays. The existence of this planet within the ‘Hole in Space’ upsets all previous ideas on the matter.”

At this point, when the participants were beginning to get rather heated, Masterston looked up from the papers he had been examining, and said sharply: “All this theorising is neither here nor there. We must decide what is to be done, and that quickly! I will not detain you three gentlemen any longer, as I am sure you must be tired out. We thank you for your lucid reports, which I have here. The *Atomite* had better return for overhauling to its building-yard, though you need not leave until tomorrow. Hutton; as you are now without a ship, you and your crew had better hang around the Northumbrian Airdrome until you hear from me. Reinmur will, of course, return with Kennedy to England. All of you are to stand-by for emergency orders, and Reinmur—*keep away from that dark planet!* Good-night!”

The German and the two commanders took their leave of the three leading men of the S. E. D., making their way back to the local airdrome and to bed. From the brooding look in Reinmur’s eyes, it seemed that there might be some justification for Masterston’s parting warning. The German could not so easily forget those far-off, pitiful creatures of the dark world!

MASTERSTON shook his head as three departed.

“That chap will need watching,” he said softly. “Now, Dr. Davidson, you can speak more freely. I take it

that the new energy-projectors are nearly ready?"

"They will be ready in plenty of time," nodded the physicist. "It's a rotten business, but we must protect ourselves. I should have liked to have paid a visit to that dark planet. . . ."

"Cut that out! What in the name of Jupiter is coming over you fellows? First Reinmur, now you—getting maudlin, and weak-kneed. You've started this business, and you're going to see it through, and not all the governments on earth, Eastern or Western, are going to stop it with their squeamishness! They will know nothing about it until the energy-beam strikes the dark planet." And Masterston returned to his examination of the photographs, (taken on board the *Atomite*) which Reinmur had left behind for his benefit. Davidson looked across at White, and the latter shrugged his thin shoulders.

"Could we not experiment with the repulsive force on the moon?" ventured the astronomer after a pause. "There's no one up there to take any harm."

Masterston glared over the table at him. "I intend that the moon shall soon be a useful outpost and jumping-off place for the S. E. D. vessels. It is far enough away as it is, without our trying any fool experiments which may hurl it into the sun! We must face the fact that it is going to take all the atomic power at our command to even pierce this black envelope around the planet—or Etherless Zone, or whatever you care to call it. The fact that such tremendous power will almost certainly disintegrate that planet cannot be denied, and any half-measures will just as certainly hurl this earth out of its orbit into God knows where!

If we do not use sufficient force to either repel or smash this little world, then the 'back-fire' of our own weapons will be our own undoing!"

White was a persistent man. "Then why not let things take their natural course?" he argued. "It seems that we run decided risks in any event, especially as we do not yet know what the full effect of this new energy of Doctor Davidson's will be. Why not let the Western Government know about this danger, and ask their opinion?"

Masterston stood up and thumped the table heavily with his big fist. "Because the S. E. D. is a law unto itself—it is more powerful to-day than any government, East or West! This is a matter for our Company only, and no official busybodies are going to get the chance to interfere with our plans. We have decided that this dark planet is a growing menace to the earth, and as such must be removed. . . . Doctor Davidson; supposing we accept the Ether theory for the sake of simplicity. Do you consider that the atomic force you can release and control will be strong enough to force its way through this 'Etherless Zone' and so reach the planet itself?"

"I am tempted now to discard the idea of the Ether, and call this zone a 'Black Hole in Space'. From the description given by Reinmur, I should say the dark planet is really of considerable *volume*—but loosely held together, and therefore constituting small *mass* because of its light density. I can see no particular barrier to my energy-beam in its black envelope—but of course, there is often a wide gap between theory and practise on such an enormous scale; and we are to some extent working in the dark in this matter."

The Controller nodded. "Well, you will see that all is ready to be tried out within, say, six days. The dark planet should be near enough then to try out your beam—and it is to be hoped that it does all you expect it to! These reports will be interesting additions to the museum—as the only evidence of a vanished civilization on the dark planet!" he concluded grimly, as he picked up the papers left by his late visitors, pausing for a few seconds to look again at the photographs of the two ugly little passengers the *Atomite* had carried for so short a time.

A few minutes later his two assistants took their leave, and the autocrat of the too-powerful S. E. D. was left alone to cogitate upon the consequences of his decision.

LATE one night, five days later, the inhabitants of every town and city within hundreds of miles of a certain lonely spot on the Atlantic seaboard of North America, were startled by a continuous, deep-throated roar—a menacing rumble, deeper than rolling thunder, which shook the ground with a steady vibration. Those nearer at hand heard, in addition, a steady spluttering from the sky overhead, and on issuing forth to investigate, were startled to see the dark heavens split across by a broad, parallel beam of bright blue scintillating light. At least, the people took it for light, though it was noticed that the fizzing and spluttering roaring came from the blue ray itself, whilst the deeper rumble appeared to emanate from the direction of the source of the beam. The latter, which seemed to issue from a point high above sea-level, slanted across the dark sky into the west, extending far out beyond the earth's

atmosphere as no searchlight had ever been seen to do.

It was the last night of the month of Sol, the first of the new thirteen-month earth-year, and the brilliant orb of the planet Venus, now at greatest eastern elongation, still hung low in the western heavens, as it was but two hours after sunset. The great beam swung slowly higher and a little to the south-west, where a telescope revealed a certain circle of blackness in the track of the zodiac. There the blue ray ceased further motion, and concentrated for a few minutes. Then, with an increase in the spluttering roar, two other rays of similar hue shot out into Space, focusing on the same point as the first. The great rumbling was by this time like a continuous earthquake, and could be heard thousands of miles away. The millions of spectators asked each other what it could all mean, and enterprising pressmen in the vicinity of the beams tumbled post-haste into their rapid single-seater 'planes' to hasten to the source of the uproar.

These excited gentlemen however, had no sooner flung themselves aloft than the insistent call of their radio-receivers claimed their attention. The messages which came through warned them to keep far away from both the blue rays and their sources, if they valued their lives. Those who were foolish enough to ignore the warning ran their machines against the invisible magnetic barrier which Dr. Davidson had caused to be erected against such interruption, and were forced to make precarious descents in the darkness. Those who approached the center of the proceedings on foot or by land vehicles, found their way barred by armed guards of the Solar Exploration Department,

who were ranged around the great atomic apparatus in a large circle.

For several hours the bright beams followed the track of the dark circle through the zodiac, as the dark planet slowly dropped towards the horizon. The huge, hooded machines from which the rays emanated, crouched like great prehistoric animals in the gloom, while small figures moved silently about them, clothed in special ray-resisting uniforms to protect them from the unseen radiation which might escape the shrouded molecule-breakers. These latter, carrying loads of several millions voltage, and with their short snouts pivoting slowly to counteract the Earth's rotation, were surrounded by special ray-resisting screens to check the stray rays which were suspected of being released as the molecules of the special compounds parted with their pent-up energy.

A few hundred yards from the machines, Dr. Davidson spent the time at the small telescope installed on the roof of the massive power station of the S. E. D., near which the experiment was being conducted. At last, as their objective sank too low for further safe operation of the three rays, he reached out and pressed the control keys on the panel near him, and the noise outside died slowly away. He turned irritably to the chief astronomer, White, who was watching the display from a window.

"It is a complete failure so far, White. Of course, the planet is a long way off yet, but I do not wish it to get too close. I wish to heaven Masterston would abandon the whole idea."

"Well, you could refuse to operate the rays."

"Yes, and be kicked out of the S. E. D. I would never get another

position if they cared to exert their influence—don't forget what happened to Atchison last year. Still, I think I can get out of this before Masterston decides to force me to carry out the instructions. He won't believe for a moment that the ray cannot act, because he would be watching this test—and you saw how that small meteor which got in the way flew to bits! I'm sick to death of the whole concern. . . . I'm going to England before dawn, to see Reinmur!"

White stared at him. "To England? But the Controller. . . ."

Davidson laughed. "If you can keep your own counsel, the Controller will be none the wiser until he gets a message I shall leave for him. It will not be delivered until I am thousands of miles away—on my way to the dark planet!"

CHAPTER VII

THE DOOM OF THE DARK PLANET

AT first, consternation and then excitement prevailed shortly after the rebellious Dr. Davidson landed at the Northumbrian Airdrome just after dawn the following morning, and quickly unfolded his plans to Reinmur and Kennedy. Within an hour, the three interplanetary craft stationed there, including the *Atomite*, were rapidly ascending through the outer atmosphere, each with a skeleton crew composed of those wild spirits who had been the members of the two crews of the *Atomite's* and the *Elemental's* earlier visit to the dark planet. Davidson had left a message to be sent to Masterston by radio some hours later.

By the time that important message had been delivered, the three

space-ships were nearly half-way to their destination, and well beyond the Controller's reach. The latter stormed and raved in no small measure when he heard the news, and to make matters worse, the Press somehow got hold of the story, including the reason for the previous night's beam display. Soon the large radio stations were in touch with the S. E. D., demanding an explanation on behalf of the Eastern and Western Governments. Masterston, now wild with rage, refused it, and in an hour or two, ultimatums were being flung at the S. E. D. from all quarters of the globe. Further experiments with the rays were prohibited until an investigation was made—but that troubled the Controller not at all. The S. E. D. at this time was a powerful concern, independent and contemptuous of any government, and had full control of hundreds of stratosphere craft in addition to the monopoly of a score or so of interplanetary vessels. He issued orders that the rays were to be trained upon the ever-nearing black patch of the sky that night as soon as it became visible after sunset.

"I'll show those young traitors the penalty for crossing me! If they think I am going to hold off because of their mad venture, they are much mistaken! I'll smash that planet and them with it—if they are optimistic enough to think that I dare not use the atomic beams now, they can take the consequences!" While, the astronomer, for venturing to remonstrate with his half-demented chief, was accused of treachery and hurried off to his own quarters and there locked in, with a guard at the door.

"If these fool governments attempt to use force, the S. E. D. has enough

men and scientific equipment to fight them all off," Masterston raved on. "If it is to be war between the scientists and the weak-kneed politicians, then they can look out for trouble! I have been waiting for such a time! It is time to establish who are the masters on this planet!"

Thus Masterston, the half-mad scientist, betrayed the idea which had long ago formed in the back of his twisted mind,—an idea which had no place in the minds of the group of financiers who had long ago built up the S. E. D. for purposes of terrestrial travel and exploration of the Solar System. The cunning Controller had come out into the open with a vengeance!

BLISSFULLY unaware of the upheaval which their sudden departure had caused, or rather, brought to a climax, the occupants of the three space-vessels arrived at the outskirts of the now familiar black ball which enshrouded the dark planet. Kennedy, of course, commanded his own ship, while Hutton and Elliot had charge of the older craft, the *Originator* and the *Messenger* respectively. Taking a rough bearing as they hung motionless in Space before the dark mass, it was agreed that they must be at least twelve million odd miles from earth, which they had left over seven hours earlier by their calometers.

In the commander's cabin of the *Atomite*, Kennedy, Davidson, and Reinmur discussed the matter in hand as their vessel began slowly to descend into the abyss ahead, under the able control of pilot Williams. It had been arranged that the ships were to enter the lightless void one by one, at stated intervals, and each upon landing was to make as much

noise as possible with the radite guns on board, for the double purpose of attracting each other and the attention of the small inhabitants of the planet. Their radio instruments had been carefully ignored, as if Masterston had anything to say to them, it could only be a strict injunction to return at once.

"We have not much time to waste," Dr. Davidson was saying. "It is now just after 16 o'clock, and sunset on earth is in about an hour's time—that is America, of course. Soon after that, say another hour, and this dark ball will be visible in the western telescopes—and if I know anything of Masterston, our little leap over here will not stop him trying the rays to-night! The man is half crazy over this business." The physicist was nearer the truth than he imagined when he made that remark.

"H'm. Two hours clear! It's going to be a near thing for us all," remarked Kennedy. "I noticed that the Controller seemed obsessed by a sense of his own importance, but I hardly think he'll dare to try effects to-night, with us out here."

"And to-night—you think that the rays may be the more effective, then?" asked Reinmur of Davidson.

"I certainly do. Twenty-four hours means that this dark world is over three million miles nearer the earth at the least. Say, between ten and eleven millions from earth—if that. I do not believe that it was this dark envelope which caused the failure last night, but simply the distance and the great difficulty of aiming correctly. This will loom very much larger on earth to-night, and you can depend upon it that friend Masterston will work those machines at full pressure . . . and I hope for his

sake that he fully understood what I told him about overloading them!"

"Well," said Kennedy, "we cannot hope to carry off all of these poor creatures in three ships, large as they are, and small though the population may be—but I doubt whether we can persuade enough to fill these craft, after the experience of their two leaders in the *Atomite*! It's going to take some time explaining matters with only Hutton and Elliot having any knowledge of their language," he added thoughtfully, and with some uneasiness. He was beginning to wonder about the outcome of this rather mad venture.

At that moment the lights dimmed, and then their glowing bulbs disappeared, and they were once again wrapped in the dense gloom.

"We're in it again, you see, Dr. Davidson," came Kennedy's voice from the darkness. "I've got my torch trained on where you are sitting across the table, yet you see nothing. You will find that touch and hearing are the two most important senses on this planet."

Davidson made no other comment than to ask to be guided to the control tower in order to have the uselessness of their fog-piercing rays demonstrated to him. He was frankly puzzled at the total absence of all light.

"It is certainly a hole in Space," he said later, "and I should suggest that this planet below is probably radiating a type of ray unknown to us, which nullifies the ordinary light rays of our spectrum. Tell me—did you feel anything peculiar when you were last here, apart from the close, dense atmosphere you described?"

"Come to think of it, I did at first," answered Kennedy's voice. "A kind of prickling of the skin when we first landed, but it seemed to pass off, and I forgot about it, in the other discoveries we made."

"H'm. It is obvious that certain queer conditions exist here which possibly explain the existence of any life at all under such strange conditions. This planet must be self-supporting and quite independent of the sun's light and heat. From what you found here, I should say that it is one of the youngest of the planets, with a thin crust, and an unusual form of magnetic emanation which I fear we shall never get the opportunity to fully investigate."

At that moment, there was a slight lurch; warning bells rang out throughout the ship, and after a few seconds of skidding and bumping about, she came to a stop. After waiting the agreed time, which was estimated by counting, the crew fired off their radite weapons into the air. A few seconds later distant noises indicated the presence of one of the other ships, and it was not very long before communication was established between them, and the vessels linked by a fine wire. There was as yet no signals from the *Messenger*, and at set intervals, the firing was continued.

Small parties, linked to their vessels by reels of fine wire, which they unrolled as they spread cautiously out over the unseen surface, set off in various directions, signalling noisily as they progressed. After an interminable delay, one of these groups at last found a few terrified inhabitants running across the soft ground. Further delay occurred before the two main communities were again traced, and the delighted creatures

reassured about their visitors. Hut-ton quickly got into touch with the leaders of the settlements, and with great difficulty and much broken language at last managed to convey the reason for their visit. From the outcry which arose as his message was interpreted by the leaders, it was evident that it was receiving a very mixed reception. There was some doubt as to whether they fully understood the import of the whole business, and the Earthians fumed and fretted while the negotiations went on.

There was also the non-appearance of Elliot and the missing *Messenger* worrying them, and though the search-parties were now spread out over some miles, there seemed to be no response. Time was growing critical, and Davidson was in perpetual trepidation, fearing the appearance of the deadly blue atomic rays overhead. At last numbers of the little natives were persuaded to enter the two space-vessels, and the various sleeping compartments of the crews were given up to their accommodation. Some of the creatures could not be cajoled into entering the ships, which were already well filled. Hut-ton and Kennedy had checked the numbers on their respective ships, and they estimated that there would be about three-score in each. An interview with the native leader led them to conclude that fully as many more of his followers yet remained.

THE distant firing broke out afresh, accompanied this time by violent tugging at the connecting wires, and soon distant cries intimated that the *Messenger* had at last found its bearings. Kennedy had just discovered from the newly-arrived Elliot that he had gone astray

in his descent and made several false landings before he heard their uproar, when, seemingly miles distant in the blackness far away to one side, there was a familiar spluttering roar. Davidson started in alarm as he gazed in the direction of the sound—there was a dim blueish radiance a long way off, and spreading wider every moment!

"My God! The ray!" he yelled out. "Get as many aboard as you can carry, Elliot. Quick—there's no time to lose!"

While the blue glare far above was striving to pierce the black, protecting envelope around them, and lighting up the surface for probably the first time in the life of the small world, the crews hurried numbers of the natives upon the third ship. The crews and leaders of the *Atomite* and *Originator* hurried on board and made their preparations for quick departure. The few score inhabitants remaining cowered in terror as the dim radiance affected their sensitive skins, and for the first time the Earthians had a very brief glimpse of the strange world. In a very few minutes the *Messenger* was crammed full of strange passengers, and within a few seconds of each other, and but a short time after the first appearance of the light above, the three vessels lifted rapidly from the surface of the little planet for the last time.

From the control tower, Davidson and Kennedy had a confused vision of a wild-looking stretch of land below, dimly illuminated by the blueish light, which was growing stronger every second. There was a rapidly-fading picture of soft black soil, black rocky outcrops and low hills, ruined and roofless buildings of circular or oval shape and low height;

a blue-black stretch of water with electric fire playing over the calm surface; a brief glimpse of two thin rivers flowing into it . . . patches of colorless vegetation here and there, with a few dozen terrified creatures running blindly about amongst it; and a final vision of disturbed waters on the sea shore, as several great monsters began to heave their bulks on to the beach. Then the ship had arisen to a great height in the atmosphere on the opposite side of the planet to the increasing blue glare, which was now startling in its intensity. Not far away the other two ships could be discerned mounting steadily upwards.

WATCHING closely the blue beam, Dr. Davidson noted that it was slowly but surely pushing its spluttering way down to the surface below, moving and thrusting like a shaft of solid fire through the strange black shroud which obstructed its progress like a solid thing. As it reached the denser atmosphere not far above the surface, it completed the remaining distance with a sudden rush. A great scar appeared where it struck the soft surface, great clefts appeared in the ground, the radiance began to spread on all sides, eating up the surrounding blackness like a living thing, and a mighty crash occurred as it touched the sea far below. The *Atomite* rocked badly, and its little passengers screamed in their high-pitched voices.

Kennedy swung around to the pilot. "Quick, Williams! Angle her and all speed ahead, or we're lost! Hurry man, for God's sake, hurry!"

The tumultuous roaring without faintly pierced even the sound-proof hull of the vessel, and she shuddered

from prow to stern as she slanted upwards, staggered and dipped again, then plunged up again under the impulse of her roaring electronic discharge. Fortunately for her occupants, her acceleration was an automatic matter when once set in operation, else none of them would have survived. There was a whirling vision of the other two ships tossing about near them, an ever-increasing and blinding light-blue glare accompanied by flashes as the three Earthian rays combined to conquer the resisting envelope of the planet; starting blue and green flashes of terrific intensity from the surface, now miles below them—then a final sickening sensation. Under the increased acceleration and consequent growing weight of their bodies, Kennedy and Davidson sank back against the junction of the bulkhead and control room flooring, while the half-dazed pilot hung grimly to the nearest hand-grips, as the ship forced her way under locked controls through the battering of the mighty forces without.

Soon Davidson was sprawling insensible on the floor, and Kennedy was thinking in a confused manner that the frightened shrieks from their little passengers had quite ceased, when a sudden kick of the whole vessel flung him also to the floor in an unconscious heap. Williams, at the controls, with grim-set features, still retained his consciousness, and gave a huge sigh of infinite relief as the star-spangled Universe once more appeared in front—a sharp contrast to the raging inferno which was now dropping quickly behind them. The privilege of viewing at such close quarters the disruption of a planet was certainly not without its disadvantages!

CHAPTER VIII

GOOD-BYE TO THE EARTH

DOCTOR DAVIDSON, who had come off worse in the sickening tossing about above the surface of the wrecked planet, opened his eyes some time later to find himself lying on a settee in Kennedy's cabin. The lights were once more burning brightly, and the calorimeter on the aft wall indicated an American time on earth of 20. 45. —a lapse of something like two hours since their hurried exit from the dark planet. The physicist rose a little unsteadily to his feet, and was surprised to find that he was none the worse for his late experience, apart from a slight headache.

He stepped outside into the narrow fore-and-aft corridor, where he found that several members of the crew who were off duty were engaged in attending to the soothing of the startled little creatures of the dark world, who were crowded into the various cabins out of harm's way. Making his way to the control tower, he found the Commander in conversation with pilot Williams. Each was relieved to see that the others were unharmed, but Kennedy was looking very grave as he handed Davidson a powerful space-glass.

"Take a look through that," he said. "There's a devil of a mess as a result of this business."

The scientist stepped to the observation ports, then gasped in astonished dismay. The three ships were drifting idly in the empty void of Space, their blunt noses pointing towards the distant brilliant crescent of Venus. His startled exclamation however, was caused by the scene through the rear windows. Some millions of miles away, the small disc

of the earth was gleaming brightly, fully illuminated, not only by the sun, but also by the light from the flaring mass of the late dark planet, which was no longer enshrouded by its black envelope. Instead, it was glowing like a miniature sun, and seemed to be terribly close to the earth, a whirling mass of greenish-blue fire and clouds of incandescent gases. It occupied a space of about one degree from their point of observation, or about twice the apparent diameter of the moon as viewed from earth.*

"Why are we not making back to earth?" he asked.

"Because we are much safer where we are at present!" replied Kennedy grimly. "During the past hour that flaming mass has been gaining almost visibly on the earth. I have been in touch with the *Originator* by radio, and Reinmur says that there are scarcely seven million miles separating those two worlds—and they were *twelve* millions apart less than five hours back, when we entered the black shroud around the dark planet! I have checked his estimate and agree with it."

"What is our position?"

"We form the third point of a triangle with the two planets, at about four millions from the fireball and between five and six millions from the earth. I dare not go any nearer, or we'll be drawn into the general mix-up that seems on the way. If you look carefully, you will see that the rays are still in operation."

PEERING steadily for a time, Davidson at length discerned a faint, thin line of light-blue light which

seemed to link the two planets together, although it was lost in the glare as it approached the conflagration that had been the dark planet. Also, as he watched, it seemed to him that the gap between the two worlds was visibly diminishing.

"My God!" he breathed in acute dismay. "That fool Masterston has mis-managed those rays. . . . Why doesn't he shut them off now? Instead of disintegrating the little planet, he has merely thrown it back a few million years—and it is gaining on earth every second!"

"Exactly! That lunatic has doomed the earth and its moon—or it looks like it from here! We've called him up on the radio repeatedly, to get the rays withdrawn—but he's ignoring us completely. Those rays must be forming a kind of connecting link and that mass of fire is following their track to earth."

"The rays are shifting!" cried Davidson suddenly. "They are swinging lower. . . . Good God! The madman! He is flattening them out too much—he'll smash everything around him if he's not careful! Why doesn't he shut them off?"

At that instant the thin pencil of light deepened in color at the earth-end to an intense blue for the fraction of a second. There was a tiny, brilliant flicker of bright blue for an instant at their source, then they vanished altogether.

"They have disappeared now—but something awful must have happened at the projectors! A tiny flash visible at this distance means some mighty upheaval away over there. Is there no result on the radio yet?"

"We have been trying ever since we got over the shock of escaping that mess behind, and the operators are still sending out the S. E. D.

*The moon and the sun each subtend an angle of a little over thirty minutes as seen from the earth.

signal. We can do no more just yet. . . ."

At that moment the voice of the chief operator issued from the loud-speaking voice-tube, asking Kennedy to come to the radio room. The two men immediately hastened to the compartment where they found the automatic instrument busily at work, while the recording side of it rapidly typed out the long message which was pouring in. One operator was acknowledging the signals, while the other watched the recording, and handed his commander the sheets with a trembling hand. Davidson, who could not keep his eyes off the distant spectacle, was watching it from a side port, while he listened to Kennedy. The latter, with a curious glance at the operator's white face, slowly read out the terrible news, which was broken in parts by long intervals, and at times was almost unintelligible. The message was from White, Davidson's astronomer friend and helper on the earth, and ran:—

"We are already in terrible plight here. Masterston went insane when you left, and seemed to have some idea of world dictatorship. I am glad you are all safe—as I thought Masterston had done for you with the rays. He used these despite ultimatums from both Governments . . . you would see the results. Air fleets were launched against him, but could not pierce his magnetic barriers . . . then he pushed the ray-projectors too far, but not before he had turned them upon the surrounding country . . . the damage was frightful. I warned him earlier about overloading, but he had me locked up in my quarters for a time. Then I heard the noise as the projectors and the towns in their vicinity went up . . . terrible shambles. I got out of my room at last, and into touch with you from the New York S. E. D. Station. And now . . . it is damnable . . . wait . . ."

There was a long pause before the message continued:—

"I have been in touch with my observatory . . . The fiery mass of the little planet is

fast approaching us now, and growing larger every minute . . . few million miles off . . . terrible yet thrilling spectacle . . . The night over America has gone before this new sun—it is the size of the moon now, and growing visibly . . . The electric and magnetic uproar is awful on my instruments, as you will find . . . the ether is jammed on all normal wavelengths . . . the heat is steadily increasing—my God! Is there to be no escape for all these millions? . . . All our ships have gone now, packed to their limits with refugees . . . trying for Venus. I suppose—have you seen any out there?"

A pause while Kennedy replied in the negative—then:—

"I feared so. The planet is too near to escape it . . . the stratosphere craft are risking a break into Space . . . folly, of course . . . but no worse than waiting here for the end. . . ."

Kennedy interrupted here to send through a query, and the reply came:—

"No—I am staying to see it out. There seems little hope either way—up in the ships or down here . . . my assistant has already lost touch with the first ships which left here. The heat is hellish . . . the small planet is nearer now, fully a degree across . . . a flaring mass of greenish-yellow fire . . . The rate of increase seems to have lessened, but conditions are awful. God knows what is happening to the moon—I wish I could see it from here . . . Are you too far away to see what is happening to it? . . . Panic everywhere . . . they killed each other to get on to our space-ships, which were stolen hours ago . . . tearing off their clothes in the heat . . . suicides all over the place . . . poor damned fools! . . . Hold on and stand by for a time.—White."

Fully an hour of earth-time passed by, the little crowd of men in Space waiting impatiently and apprehensively for White's next news, which came at last through a perfect welter of static interruption:—

"The speed of approach has certainly lessened . . . the new sun has changed from a direct approach to a sideways motion, and is now moving slowly over our sky . . . fully two degrees in diameter, but no further increase for past . . . The light is

blinding and the heat intense some change of orbit or rotational speed still in sight, and the main Sun is rising here, hours too soon! Chaos everywhere lunatics all over fighting for their lives this is terrible, Kennedy Give my friend Davidson my best wishes for life in the new world—if he gets there This looks like the end of the old there is nothing left of I'm weakening impossible to keep going in this heat choking. Hopeless to Good-bye, all I'll try to"

Here the message became quite indistinguishable, and was completely lost in the increasing interference from the general upheaval in the region of the earth. From the ports of the three ships, the crews for many hours watched the celestial display, the new sun drawing ever further from them as it gained on the earth. At that distance the two worlds appeared much the same size, and lay apparently very close together. As the radio messages died away, it was noticed that the dark earth and its new sun had commenced to circle each other with what seemed to be majestic grandeur at such a distance, but what Davidson and Reinmur concluded was a fairly swift rate of revolution from an Earthian's point of view. Occasionally, there could be seen the round spot of light which was the earth's moon, balanced indecisively between the two worlds, but its movements hidden most of the time by its bulkier neighbors. Finally, after many weary hours of watching and waiting, without any sign of life from the radio apparatus, they set their ships towards Venus at a moderated pace, as if loth to leave the vicinity of their mother planet. Sick at heart, they called up the Earthian outpost on that planet, and informed them of their approaching visit. Nothing, as yet, was said about the great

catastrophe far behind them, and the few Earthians on Venus seemed to be quite unaware of it. This was not to be wondered at, as the long Venerian day was in progress where the outpost was situated—a day equal to her year—and so the happenings in Space were invisible to them.

It was found that they had heard slight scraps of White's last tragic transmissions, but could not make anything out of them. All this, of course, was established later, but does not concern these records.

DAVIDSON, as he watched the fast-receding earth and her new twin world revolving in close proximity, was sunk in moody reflections for a long time.

"These cursed rays!" he muttered. "That insane fool, Masterston! This is the result of interfering with Nature's laws. I wish to God I had never heard of the atom! . . . Oh God—what have I done! Cannot *anything* be done, Kennedy?"

"Nothing just now. The earth might be approached later by a specially-equipped vessel—but I do not know what resources the Venerian outpost possesses. Venus will be in conjunction to the earth in a few months, and then perhaps we can send an expedition—though I suppose Venus will be herself affected at that time by this new development. Until then . . . !" he paused and shrugged his shoulders helplessly; then resumed: "There is no sense in blaming yourself for this—both you and Masterston were merely instruments in the hands of Fate, or God, or whatever you like to call it. The majority of mankind were pretty rotten, in all conscience, as you must admit!"

Davidson paused before answering: "True enough. The S.E.D. was

growing too powerful and dangerous—the Eastern and Western Governments were jealous of it and of each other. I suppose there was bound to be a flare-up of some kind or another, and it would have meant slow and steady killing off of perhaps many millions in all countries; whereas....” he stopped abruptly and shuddered.

“I suppose there is a guiding Intelligence behind all this,” murmured Kennedy, with unaccustomed gravity. “This upheaval has been a terrible thing for our planet, but the survivors may erect a new and better civilization out of the ruins. Had the S. E. D. survived with Masterston as head, we should never have been allowed on the earth again, so it makes little difference to us either way.” After a

long pause he continued: “Cheer up, Doctor—we have to play our part in starting a new life on Venus, and Hutton assures me that conditions are fairly pleasant there. We’ll be a very mixed lot—the Venerians, ourselves, and about a hundred-and-fifty of these poor little devils who have lost their planet as well! I doubt whether they will survive there, unless we can manage to keep them in total darkness It is a big job before us, and God knows how it will turn out! But we must face up to it no women, except the Venerians I wonder” and his voice trailed away as he gazed abstractedly at the gleaming crescent of the new world swinging majestically in Space before their speeding craft.

THE END



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Prometheus

By ARTHUR K. BARNES

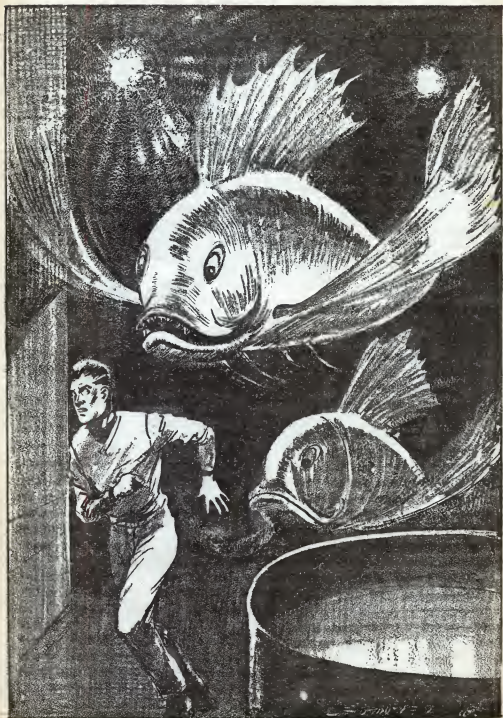
In ancient mythology, we read of the doings of Prometheus and how he got the better of Jupiter. Here we have a modern version of wonderful changes à la Prometheus in the world of fishes. This story introduces a new author to our pages.

IT would seem that the broad outlines of the Scourge of '82 have been kept sufficiently fresh in the minds of the people so that any other literature on the subject would be a sin in the direction of superfluity. Innumerable newspaper articles from all angles of the episode, reams of historical novels concerning themselves with those troublous times, mountains of scientific scribblings—all these have combined for a decade to keep the incredible horror of the Scourge one of the most talked-of events in all world history. As is the case with all epochal, much-talked-of events, however, truth has become sadly distorted with the passing of the years. Facts have been twisted to fit writers' imaginations; situations have been scrambled to suit the demands of fiction; legends, fired by actual feats of valor and heroism during those terrible months, have sprung up like jungle vegetation, obscuring, and all at variance with, the real facts of the case. It is for this reason that the writer is minded, once and for all, to straighten out these many misconceptions and relate the true story of the genesis of the Scourge.

Perhaps not the least ghastly part of the business is the fact that the whole thing started from a joke. If it had been a good gag the irony

wouldn't have been so bitter, but no—it was an ancient, moth-eaten joke that hadn't raised a genuine laugh for fifty years. To be exact, printed evidence has been found that the thing first saw daylight in newspapers dated as long ago as 1930—more than half a century before it sparked the mental tinder of the man who brought down about our heads the greatest catastrophe of modern times. It was like a jingle tune which, as the thematic melody of a symphony fed by overtones and variations, swelled until it became a veritable diapason of terror.

IT was hot, stifling in that shallow little ravine in the Del Rey hills, though I could see a breeze rippling the curtain of brush a few inches above my head. The flies were bad; they had already found the body. Looking back toward the clearing I could see the lab. It was empty. And where the door had been now lay ruin. The frame was demolished, and a talus of shattered bricks and powdered cement lay at either side of the gap. The door itself had been burst from the top hinge and lay drunkenly at full length to one side. The key was still in place where it had been forgotten after last night's shock, permitting this man to carry out his scheme of jealousy and revenge. I looked down at him again. He was



My heels dug in frantically; I hurled myself headlong in a desperate dive for the door.

lying on his stomach with arms outspread. One leg was drawn up, as if he had been struck down in full flight. He had paid the highest price of all. It was Ammerman.

On the far side of the clearing where the road entered it a small group of newspapermen clustered on the shady sides of their cars. They hadn't seen the wreckage of the lab yet; they knew nothing of the body in the ravine. They just listened to the high, clear voice of the little man who spoke to them. I listened, too, making out an occasional phrase, and knew it for the voice of my employer, Duvernet. It sent my memory back to scene after scene of the past months, like an old magic lantern flashing its slides on a screen.

Duvernet! Doctor Pierre Duvernet! What anguish and thrills and heartache and awe that name inspires in every man and woman even to-day. I had no inkling of what the future was to hold for that man and myself as I read his "help wanted" ad. in the paper. A name destined to be cursed as synonymous with all that is cruel and despicable and vile, to be hailed with hysterical joy and praise; a name to be spit upon and sucked into the whirlpool of disgrace and oblivion, only to be spewed forth to the very heights of fame and adulation; a name to be trampled into the dust, then carved on monuments as the preserver of nations, heaped with blessings and benedictions as the savior of the world.

I remembered our first meeting. Duvernet already had some reputation as an endocrinologist and scientist of note. But when I first laid eyes on him, I very nearly burst out laughing in his face. You know how political cartoonists from time immemorial have pictured France—a little man

with black goatee and thick eyebrows, dressed in top hat, morning-coat and spats? Well, Duvernet had got himself up as an exact replica of this figure. My first glimpse of him came as he strode up and down the carpet in his Los Angeles office, beard wagging, hands waving, muttering alternately to himself, "*Zut!*" and "*Zut, alors!*"—a dynamic, mercurial, preposterous little Frenchman with his top hat slanted rakishly over one eye. And despite his appearance there was that about him which commanded respect, and perhaps fear, too. At least it did in my case.

He pounced on me, emitted a few *zuts!* and demanded:

"You are an experienced lab.-man, yes?"

I answered truthfully, "No, I'm not. I'm just out of school, and spent most of my time while there playing football. But I took several lab. sciences and used to potter around the labs. at odd hours."

Duvernet leaned close and sort of leered up at me. "Very clever young man, I presume?"

"No." Still truthful.

"Excellent. Most excellent!" He patted me as high up on the back as he could reach, played a tune on the call-button fixed to the side of his desk. Presently a young-looking man with tired eyes came into the room. Duvernet rushed at him.

"Ammerman! My dear Ammerman!" It was hard to visualize the man's speech without a series of exclamation points after every phrase. "I have just the fellow we want. Everything arranges itself nicely. Take him. Instruct him. From to-day henceforth see that I am not molested."

Ammerman shook hands, smiled sadly, and led me from the room . . .

And now he lay lifeless before me in that suffocating little gully, face down in a welter of blood.

I recalled our brief chat as we walked down a corridor, and his explanation of Duvernet's relief at finding a man suitable to take over the routine duties that interrupted his experiments so often. We stopped before a door, which Ammerman opened, stepping aside for me to enter. "Cloak-room," he offered. "Lockers for your aprons and gloves."

I went in, looked around, and stood paralyzed. Climbing around on top of the row of lockers were a half dozen undeniable fish!

I looked around at Ammerman, mouth working but not having any great success. His smile was hopeless. "Several species of fish are known that are able to remain out of water for varying periods. The lung-fish, gurnards, and others. Duvernet has made some adjustments on these specimens, permitting them to live entirely away from water."

I guess I must have still looked pretty much at sea, for Ammerman had gone on to explain about the joke that started the whole affair.

"It really started at a party the Doctor attended some time ago. One of the men there got tight and started ribbing Duvernet about his scientific reputation, pretending not to believe some of his achievements, belittling others. Finally he told a joke about a man who had caught two fish and kept them alive in a pail of water. Gradually, by removing a portion of the water each day, he trained the two fishes to live on dry land. They became quite fond of him and followed him about like dogs." Ammerman paused, looked at me, sad-eyed, to see if I were inclined to laugh. I wasn't. So he sighed and went on, "Someone asked

what became of the fishes, and this fellow said that it rained one night, and while out walking with his pets they fell into a puddle and drowned."

I smiled then, but more in pity than anything else. Ammerman nodded.

"Unfortunately, Doctor Duvernet has no sense of humor whatever. He took the whole thing quite seriously. And when this souse guffawed and nudged him and said he bet Duvernet couldn't do that for all his degrees, the Doctor went right up into the air and vowed he'd better that experiment if it were the last thing he did on earth."

I LOOKED closely at the strange creatures on the locker. Some of them had developed three spiny "legs" on either side, growths from the fin-rays, and walked along like old men determined not to give in to approaching senility; others hitched themselves along more slowly. I suggested that the experiment was apparently a success, and asked why he needed more helpers.

"Oh, one idea led to another. He has something new on tap now. You'll find out."

That was January 17, 1982 Now I had found out, and so had Ammerman, to his cost. Clothes hung in shreds about his thin frame, and his back had been literally torn apart by some savage attack with knives—or fangs.

I recollected those early weeks together, just the three of us. My duties had by no means been arduous. In the two main rooms of the big lab. building Duvernet had installed several series of glass aquarium tanks, most of them containing a great variety of marine life. It was my job to regulate the flow and temperature of the water, feed the specimens, and gen-

erally take care of the layout as instructed. Much of my leisure time I spent watching the fascinating activity of Duvernet's captives. Perhaps the most entertaining of the tanks, and the one from which Duvernet most frequently took specimens on which to work, contained a number of small fish about the size of a trout, striped. They were extraordinarily vicious and attacked everything else placed in the tank if the intruders weren't too large. In the latter event, they made use of a small gland they possessed to release a gas into the water. Although the gas dispersed quickly, it discolored the water and apparently distorted vision, allowing the striped terrors to reach the safety of their rock castles on the bottom.

Throughout February and March I had tended my tanks and kept my eyes open. Ammerman and I had become fairly friendly, too. He had a shell of reserve, which I quickly pierced, and a good deal of "snootiness," which I ignored, and we found each other to be regular human beings, with plenty of faults and plenty of rough virtues, and we liked each other the more accordingly. I saw very little of Duvernet, except when he came in to take out more specimens and to see how I was doing and overwhelm me with a volley of "Zuts!" whenever I did something not exactly to his liking. It wasn't long, of course, before I found out what he was attempting to do. In the second roomful of tanks were several which contained no water. Some were arranged to be filled with steam; others had no apparent "luxuries" for the tenants except jets for warm air. It was in these tanks that Duvernet placed most of the myriads of tiny, new-born fish that came from his private laboratory. His object soon became clear; he was

trying to cross-breed his land-living creations with several of the fish that were unable to live out of water.

The layman will at once laugh and point out the impossibility of crossing genera. There are well authenticated records, however, of many weird hybrids that have appeared on earth from time to time. I knew that. And the fact that Ammerman and Duvernet took it all very seriously was sufficient to make me wonder if, after all, the Doctor might not be on the road to something.

And now I had before me the full fruition of Duvernet's labors, rolling limply beneath my foot, easy prey for the meanest things that crawled.

Success had not been easily wooed. I called to mind the dozens and scores and hundreds of Duvernet's little charges that died almost as soon as they were born. Every morning he rushed into the aquarium rooms, wild-eyed and panting, demanding of me what had happened during the night. Before I could answer he was looking for himself, swearing and groaning, as if each dead fingerling represented an irreplaceable personal loss. There seemed to be something not quite normal at work in the man's mind, but he was indefatigable. Night and day he spent in feverish experiment. For every hundred failures, he had two hundred prepared to take their places. For every thousand dollars lost on specimens, he spent two thousand more. And gradually the lines of progress became more and more clearly defined.

The hybrids produced by the little striped fighter with an unpronounceable name and the strange out-of-water fish seemed most resistant. They lived, some of them, as much as three or four hours after hatching in the dry tanks. Then one of them sur-

vived for two days. Duvernet was simply impossible during those hectic days. He became wildly excited, rattled off great streams of abuse in French at my slightest incautious motion, then tried to berate me in English only to have grammar and syntax go completely haywire. Even Ammerman seemed infected by the Frenchman's enthusiasm. He cursed me out in his mild way nearly every day.

Then one morning Duvernet came to me and said in his precise way:

"No longer, my big friend, will you enter the inner room." That's the way we always referred to the dry-tank aquarium room. "From now on you will confine your activities to the main laboratory."

With which he strode rapidly into the inner room and ostentatiously snapped the inside bolt. I asked Ammerman about it later on.

"My dear Carter," he said, so damned superior that I grinned in his face. "My dear Carter, if you'll just leave the scientific end of the arrangement to us who are competent to handle it, you'll have more time in which to manage the—"

"The dirty work?" I suggested, thinking of the hours I'd spent sweeping floors and scraping tanks, up to the elbows in dirt and slime.

"—the routine matters," was the way he decided to put it.

Ammerman, with no intentional disrespect to me, was obviously quite sold on himself when Duvernet let him in on the secret experimentation, flattered to be the Doctor's assistant, conceited to think that he was the only one in the southwest sufficiently equipped for the position. I was glad for his sake, too, so I shrugged and let it pass.

THAT was April 7, 1982 . . . And now all intelligence and pride and egotism was as the dust, and Ammerman himself was one with the hot stillness of that dusty little ravine.

I smiled faintly as I remembered their attitude toward me—as a good-natured, easy-going hulk, content to draw my few dollars a day, uninterested in what was going on. But they misjudged me. I kept my eyes open, and it wasn't long before I had learned plenty. To begin with, I knew the reason for the sudden retirement act was an unexpected success in the cross-breeding. Evidently the Doctor had produced one or more hybrids that were going to live, and he was ready for further work on them. I soon found out the nature of the new experimentation, too. It was my duty to check-in all supplies delivered, and I quickly discovered that large amounts of pituitary extract and thyroxin were ordered weekly. True, it didn't appear quite like the glandular extracts I was familiar with, but labels don't lie. From this I deduced that Duvernet was controlling or stepping up the metabolism of his subjects and stimulating their growth as rapidly as he could. And from odd snatches of conversation I gathered the reason for the crossing was this: the weird land-fishes that Duvernet had developed with the idea of creating a new genus were lacking in a strongly marked instinct of self-preservation, so he had selected a fish that was a fighter from start to finish and inculcated that quality so necessary to wild-life existence in his new strain.

The Frenchman called a conference early in May, wasted no time in getting to business. "Going to be some changes made," he started out abruptly. "Going to move our quarters.

Out in the hills. Seclusion is what I need now."

He was dressed, as he dressed whenever he engaged in anything with the least formality attached to it, in his top-hat and morning coat. The tails stood out behind him like wind cones as he marched up and down the room.

"You, Ammerman," he stuck out one long white finger, "I shall need no longer. I have your check ready, with a bonus for the unexpected release. You, Carter, I shall want. There is much work to be done."

Under some circumstances it would have been a treat to see Ammerman's face. It went positively green with disappointment and chagrin. But I felt genuinely sorry for him at that moment. My attempts to console he brushed aside with affected dignity.

"I am sorry," he said with great precision, "to find the Doctor so lacking in appreciation for—"

But Duvernet sensed a speech coming and walked out on it. For a minute I thought Ammerman would take after him, as he stood there working his fists, face crimson with fury. But he managed to control himself, and presently he, too, left the place.

That was May 3, 1982 . . . I never saw him again, alive.

Duvernet's "much work" had consisted in moving, single-handed, the entire contents of the big laboratory. It was all done secretly, after night-fall, and took the better part of a week. The new location I could see quite clearly by stooping and peering through the brush, its bare brick walls, the iron-barred windows. The place was divided into two rooms, a small one for the tanks, and a larger one which I was not allowed to enter. Housing accommodations were in the form of a ramshackle little hut, set apart from the big building at a short

distance. It had been a foreman's office during construction at some time in the past, and removal of rusted tools and abandoned gear revealed great gaps in walls and flooring, a sagging roof. Two cheap cots and a small electric stove sufficed for our needs. My first comprehensive view of the whole set-up, with the vast building standing naked in a hard, brassy moonlight, and the miserable shack squatting blackly to one side, made a very unpleasant, even sinister impression.

My premonition had been fulfilled, I reflected, scraping blood from the sole of my shoe. Minute after minute slid by into eternity, and Ammerman lay unbelievably limp and grotesque in the sunshine. Voices roused me, and I squinted back to see the little group approaching the laboratory.

MEMORY, hot and sharp, relieved the fantasy of last night. Another month had been spent there in the hills, with me tending tanks, preparing meals, trucking in the incredible amounts of raw meat that Duvernet ordered. Then a forgotten key in the lab. door gave me an opportunity to appease my natural curiosity. Without any hesitation I turned it, slid the door open and looked in. It was dark, but a switch by the door bathed the place in the brilliant glow of the sodium lamps. At first glance it was just a big, bare room, smelling like the concentrated essence of all the stables in Kentucky. At intervals along the walls were set little nozzles, looking very much like old-fashioned gas-jets. I placed my nose by the nearest; the sickly sweet odor of chloroform hung there and set my head to spinning. On the far side of the room lay a mass of indeterminate grey. As I watched, it began to stir,

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take shape. Then my eyes went suddenly into focus again, and I saw it to be a pair of gigantic fishes, perhaps twenty feet long. One of them moved sluggishly around till it faced me, moved jerkily forward on fantastic, spine-like legs, and abruptly launched itself into the air. With pectoral fins outspread like giant wings, and sculling itself with a vast tail, it sailed across the room in a vicious arc, sharklike teeth flashing in a hideous snarl, ravening for my throat.

My heels dug in frantically; I hurled myself headlong in a desperate dive for the door. I made it, hot breath on my neck, and my face ploughing through the gravel outside. One flailing arm slammed the door, and in the next instant the whole building rumbled and shook from the smash of that nightmare bulk against its inner walls.

Blood streaming down one cheek, I staggered up to the tiny grill set into the door, peered through. The entire chamber was filled with an evil-smelling bluish vapor, baffling the eyesight and making all the more terrifying the thumpings, slitherings and bangings that filled the night with sound. I made a dazed way back to the hut, and it was only when I saw Duvernet peering sleepily out the door that I experienced a return of normal emotions.

But I made up for lost time then. I raved; I swore. I shook the Doctor like a rat till his teeth chattered. I was quitting my job then and there. I was going to the police. I'd have the man locked up as a public menace. I'd—While I drew another breath Duvernet began to talk. He was apologetic as only a Frenchman can be, to the extent that I began to be ashamed of being the cause of such abject self-humiliation on his part. He talked of

the Great Work, how it had reached its completion. To-morrow was the great day; the newspapermen would be there, prepared to write the lines that would stun the world and give him undying fame. Give *us* undying fame. For naturally without me nothing could have been accomplished.

He began then to give me intimate details of the experiment—how the great pectoral fins had developed, with growth, into winglike surfaces, permitting his pets to “fly” in the manner of flying-fish. How the—but I was glowing now, partly from Duvernet's smooth tongue, partly from several swigs of brandy, which always makes me contented and drowsy. And in the end, of course, I agreed to stick.

That was the night of June 23, 1982 It was easy to reconstruct events. Ammerman had located us, had hung around like a jilted ghost, filled with bitterness at the fancied injustice and a longing for revenge. Then the forgotten key, a stealthy opening of the door, a sudden upflung hand and cries drowned in the crash of the laboratory doorway as a big body thrust through, a patter of feet, then—oblivion. I shook my head, and for reasons vague and obscure even to myself, decided to contravene justice. It seemed a momentous decision at the time; actually it meant less than nothing at all. I seized the body by the heels, dragged it further up the ravine, and hid it in a pile of dead leaves and rubble.

When I came back to the clearing the newspaper men had gone. Duvernet was seated on the doorstep of the little hut, face buried in his hands. I went up to him, placed a hand on his shoulder.

“It's tough, doc,” I said. “I'm sorry.”

He sat there without saying anything until I repeated the sentiment. Then he looked up with a blank, vacant expression in his eyes.

"Tough?" he said. "Tough? It's intolerable! To me they cannot do this thing. They do not believe me! They call it a hoax!" His voice began to rise to a thin scream. "They call it a hoax! They brand me a fakir! *Zut!* American swine!"

TO stem the verbal bombardment that seemed imminent, I told him about Ammerman, and how I had hidden the body in the brush. But he didn't register any particular emotion at all, just shaking his head in a dazed way. All his energy had simply been drained out of him by the disaster, his wits befuddled, his enthusiasm crushed. I left him alone.

The evening papers carried a few lines about the "attempted hoax" of Duvernet. The headlines were mostly concerned with a mysterious attack on three people which had occurred just outside of Inglewood. It appeared that some one had run amuck with an ax or heavy-bladed knife, and slashed the victims to ribbons. There were no witnesses. I read the article over twice, killing time, before its full significance burst on me with sudden, icy shock.

In a split second I legged it out of the restaurant where I was waiting to be served, made the car, and drove recklessly back to the lab. Duvernet I found inspecting the wreckage, in a more philosophical state of mind than when I left. Reassured, I showed him the article.

"Doc," I said, when he had finished. "You have probably gone to see Ammerman's body. You recognize the similarity of the two cases. In fact, the newspaper mystery is no mystery at

all to us. We know what's responsible for the Inglewood killings. Doc," I was in dead earnest now, "what is this thing you've let loose upon the world? What is going to happen?"

The Frenchman stalled around and tried to dodge the facts, but finally I persuaded him it was his duty to tell the papers again about his experiment in the light of recent developments. He did so, but it was no use. They printed the story this time, but ridiculed it a dozen times in every paragraph. The tune they sang, of course, was the impossibility of crossing genera, the incredibility of the existence of any such creatures as were described by the "crank scientist," and the fact that police attributed the wounds to man-forged weapons.

Duvernet was relieved in a way, though more bitter than ever, but I had a good idea of what was to come. Three days later the papers confirmed my apprehension. Another triple killing, near Culver City. This time there was an eye-witness, who described "two things that looked like balloons with wings" which rose from the mangled bodies and sailed away into the dusk.

From that day on, for three weeks, not a day passed without at least one death. The two monsters and their work filled the front pages of every newspaper in California; photographs and sketches leered at the reader from every edition. The city was in an uproar. Panic-stricken mothers refused to let their children leave the house. Sedate and respectable citizens took to carrying weapons to work. Night traffic dwindled, and scarcely a car was to be seen on the streets after ten. A harassed police force scoured the county for traces of a lair, but without success.

Duverniet was very much distraught over the affair and insisted on remaining in the little hut in the Del Rey hills. I stayed, feeding him almost like a child, as he was much too absorbed in reading every newspaper we could lay hands on to pay attention to the normal routine of living.

"What'll happen to these—Frankenstein monsters of yours?" I asked him once. "This can't go on forever, you know."

Duverniet looked at me with the unmistakable glitter of unbalance in his eyes. He raised one arm toward the heavens. "Male and female He created them," he chanted. "A new race has been born unto—"

I grabbed him by the shoulders and shook sanity back into his head.

"**S**NAP out of it!" I yelled into his face. "Talk sense."

Duverniet had the grace to look ashamed. "Zut! Such a demonstration. I am ill, my big friend. You must forgive . . . As for my pets, soon they disappear. They spawn. And one day they return, millions strong, to take over the waste spaces of the world for their own."

I thought of Ammerman. "Why confine themselves to waste spaces? So far your creations seem to prefer civilization's comforts exclusively, with a finely developed taste for human flesh."

Duverniet looked pained, shook his head violently. "No-no-no! That is only because they have yet to adapt themselves to a new world. They are frightened. They believe themselves attacked. But soon they become adjusted and, like all wild creatures, will shun the haunts of man." Duverniet was very positive about this. It was his only mistake.

True to the little scientist's predictions, the strange marauding creatures ceased their carnage and vanished entirely within a few days. Weeks passed without further reports and gradually they were forgotten. Men and women resumed their wonted modes of life; all was once more joy and sweetness and light. That is, for everyone but me. Under Duverniet's direction I worked to repair the damaged laboratory, but my heart was not in the job. Every day that passed left me more nervous, jumping at each alien sound, scanning the heavens for signs of the promised return. Every car-ful of happy beachgoers that drove noisily along the near-by road, every group of care-free picnickers, left me in a sweat of apprehension. Finally I could stand it no longer. I went into town and told my story to the editor of one of the largest dailies.

It made good copy, this yarn about a new race that was being born somewhere in the fastnesses of Mexico, or the wastes of the Mojave, or the wilderness of the Cascades, soon to take over the rest of the world by sheer numbers and savagery, and erase mankind from the scroll of evolution. They played it up with headlines and pictures Duverniet and the wrecked lab and plenty of rehash on the old stories about the killings. Reportorial pens dubbed it "The Scourge." But no one took it seriously. People read it, as they read the murder mystery in the Sunday supplements. Like stories of the "next war," it gave them a cheap thrill. Young men set their jaws and enjoyed imagining what they'd do to those flying devils if they dared get within reach. Girls gave ecstatic shudders and squealed in delight as brothers and sweethearts illustrated the most approved methods

of instant annihilation. People everywhere read the story, tossed it aside, and laughed.

But Pierre Duvernet, though it was a bitter one indeed, had the last laugh. For upon October 21, 1982, the California sun dawned upon a world gone mad.

At 4:57 A.M. the air mail from Albuquerque arrived, with the pilot reporting a curious phenomenon toward the south. "Visibility was poor," he said, "but it looked to me like a vast, thin cloud bank, or a rough metallic shield, moving rapidly northward, stretching backward to infinity." The pilot was much given to flowery diction.

At 5:45 the extraordinary appearance of the southeastern sky was easily observable by early risers in the city. Rumors of typhoon circulated, ridiculously and tragically enough, and brought the populace outdoors in full force to watch. A large mob gathered in Greater Pershing Square. By seven it was clear that here was something far different from any storm or ordinary manifestation of nature. The sound sibilant and disturbing, as of wind whistling through a myriad tiny wires, drifted in to the silent, watching multitudes. Observers with field glasses began to pick out individual shapes. "Air maneuver" was the next word that went round. Then abruptly, as the sun shone clear for the first time, through the loud-speaker system someone shrilled in stark fear:

"It's them things! Them flying sharks! It's the Scourge!"

With the sudden ruthlessness of the hammers of Thor, Duvernet's monsters, a million strong, swept down upon a helpless metropolis and ravaged it from end to end. For seven incredible, bloodfilled days that devil's

brood hung over the city, until the thickness of their bodies and the clouds of nauseous blue gas they ejected, literally blotted out the sun. Beneath that murky curtain thousands upon thousands of helpless men and women were struck down, battered and mangled with terrible ferocity. Guns roared, pain- and terror-filled shrieks mingled with the groans of the dying, with the crash of glass and rending of wood as temporary havens gave way before the assault, with the thin screen of air cleaved by giant fins in a swoop of death.

FANTASTIC scenes, of heroism and cowardice and cunning and sheer madness, were enacted every minute as frantic fathers and husbands strove to get their loved ones to the only safe shelter afforded by the concrete walls of downtown buildings. Men argued in the streets, cogently pointing out that hybrids cannot reproduce themselves, and even if they could, acquired characteristics cannot be inherited, then were annihilated on the spot by the very creatures they proved could not exist. Attempts were made to fight back, of course. Scarcely a weapon in the entire city failed to see service in those panic-stricken days. The tough scales on the attackers formed such an armor-plating, however, that lead slugs spattered harmlessly off. Steel-jacketed bullets were used, but only the heaviest calibre rifles made an appreciable impression. Daring aviators rolled out their planes, guns loaded with explosive shells. But these tended to go off before sufficient penetration, and the most brilliant maneuvering proved unavailing against a hundred thousand opponents. For the big fish seemed to sense a real danger in the airplanes, attacking relentlessly on sight, in-

variably sending them down shattered and broken.

Hundreds of the weird monstrosities were blown to bits by high explosives; others were destroyed by the big coast-defense guns near the harbor. Spray-guns, built to contain powerful corrosives, did some damage. But these triumphs were negligible. Poison gas was tried, but the more volatile gases dispersed too quickly, while the heavier types did far greater harm to the unprotected populace than to the enemy. The harassed military leaders were at their wits' end, while the hysterical, crazed city sent appeal after frantic appeal to a stupefied and helpless Washington.

It was as if some curious hiatus in time had permitted two disparate ages to coincide, loosing a flood of Mesozoic monsters upon an unbelievable world.

Then, inexplicably, at the end of the seventh day the scavenging horde took unanimous flight and vanished in the darkening sky to the north. A stiff wind from the sea that night swept away the traces of gas, and the sun, on the morning of October 28, looked upon a scene of appalling desolation. From our isolated and comparatively safe retreat in the old laboratory, Duvernet and I could see it well. The countryside, toward the city as far as the eye could reach, was littered with dead bodies, both piscine and human. Save the vultures that were already plying their ghastly trade, no living thing stirred in all that expanse.

With more nerve than sense I rolled out the car and drove into town, more than once being forced into the ditch to go around stalled cars, wrecks, or the grim relics of someone's last fight for life against overwhelming odds.

In town the streets were literally piled high with the dead. Occasional gusts of wind carried the overpowering stench of corruption. Looting was going on in a surreptitious manner, most of the people walking about in a dazed, half-conscious fashion. They acted shell-shocked. I slipped into a ruined and deserted electrical shop and took a small magna-radio, then got out of that tomb of the damned as fast as I dared drive.

When I returned to the lab, Duvernet had locked himself in. I was afraid he intended something rash at first, and yelled through the windows till he responded. He came running to the door.

"Zut!" he piped, very excited. "I carry out the experiments of greatest importance and you dare to interrupt. Take yourself away at once! Go!" He waved his arms like a windmill in my face.

I must have looked hurt or chagrined then, for he suddenly softened.

"Ah, my big friend. I understand. It is for me you have the worry, no? But see, everything arranges itself nicely. So allow me to have peace and quiet, please. While I work out the salvation of mankind."

That was the old Duvernet talking, hands and egotism working overtime, so I left him, satisfied that he was mentally well again. To kill time while the Doctor idly amused himself in the lab (so I thought) I set up the magna-radio and listened to news reports from all over the country. Bit by bit I heard the terror-story that is now engraved in living fire on the hearts of nearly every man and woman in America.

The "Scourge" had swept up the coast and struck San Francisco, then had moved further north laying waste all towns and cities in their path.

Then they turned inland and with the destructive swiftness of a plague worked their bloody way across the entire country. Weeks passed, months, and the toll of death and property loss mounted steadily. At regular intervals new hordes made their appearance to join the main body of the destroyers. These newcomers, of course, were newly-spawned "fingerlings," a good deal smaller at first than Duvernet's original pair, but none the less lethal for all that.

Lung infections and diseases began to show alarming increase. They were traced to the ill-smelling blue gas ejected by the invaders which, though not dangerously poisonous, was irritating to lung tissues and weakened resistance. And signs were already pointing to famine and pestilence about to sweep the land.

A CURIOUS, ironic twist to the whole business gradually made itself apparent. The strange creatures were very much averse to large bodies of water. Shipping on ocean or large lakes was not bothered; island inhabitants were never molested. When this was first noted, a great war-scare swept over the country, the invasion being attributed to the malignant genius of the Russians, or the Japanese, or of almost anyone who might have had it in for the terrorized nation. The scare fizzled, however, under the stress of fighting for life and died altogether when it was learned that, in spite of rigid embargo, somehow a few eggs from the monsters found their way into the Orient and gave birth to another horde of devouring devils, reducing the Far East to a gibbering madhouse.

Los Angeles suffered two more brief visitations, and after the second I thought it safe to go into town for

supplies. I reached the city after dark, and it was like stepping into a circle of Dante's *Inferno*. The power plants had been wrecked, so there were no electric lights of any kind. A view of the city from any vantage point presented a series of lurid friezes, lighted by the hellish glow of open fires and torchlight, ringed by reddened puppets bouncing and gesturing in strange pantomime. The city was in the throes of a great religious renaissance. Wild eyed preachers declared the new monsters to be a divine purge visited upon a sinful world. Multitudes were bade to make themselves ready for the Day of Judgment. The end of the world was at hand; a long-suffering Lord was about to rise in His wrath and strike down an impious peoples. Still other fanatics classed Duvernet as a latter-day Moses, who "stretched forth his hand toward heaven; and there was a thick darkness in all the land . . ." And thousands of avid listeners, become as frenzied as wild revivalists, shouted and wept and prayed.

In another part of the city, nearer what had been the heart of town, I found more practical-minded groups marching down the streets, burning Duvernet in effigy. The Frenchman was reviled in blistering terms by a savage mob who cheered every time another straw figure, dressed in top-hat and morning-coat, went up in flames. There was plenty of talk about finding the real Duvernet and making a nice big torch of him, too. I feared recognition, so without delay I slipped away from town and headed back for the lab.

Duvernet was still at work, and I burst in on him without ceremony. He looked up at me, eyes shining.

"I have it," he said pantingly, tensely. "I have it at last. We shall

destroy our destroyers. Civilization shall be preserved."

I stared at him; there was no mistaking his sincerity. I looked around, searching vaguely, I guess, for some sort of weapon, or death-ray. But there was none. The aquarium tanks were almost depopulated. Rotting fish lay strewn carelessly over the floor. On the table several microscopes were set up, and a number of what looked like bacteria cultures were lined up in one corner, artificially warmed. The place stank. Duvernet chuckled, reading my thought.

"No, no, my big friend. There is nothing of the infernal machine in our work. The defense for what was created up here," he tapped his head with a stained finger, "is to be found only in the same place."

He swept his arm around in a short gesture. "Behold here the smallest, subtlest, and most deadly of all weapons. I have experimented with a most virulent type of Myxosporidia, one of the Sporozoa. Even in its milder manifestations, it results in serious epidemics among fish. In the deadly form I have here, well—! Look. I have injected a solution into some of our specimens here. Within twenty-four hours the minute spores were found in all the organs. Deep ulcers appeared on the fish and extended into the internal organs, and the fish succumbed. When we spread this among our winged persecutors, in a month, in three weeks, pouf! they shall be swept from the heavens." He grinned smugly.

That reminded me. I grabbed his arm. "Listen, Doc. I'm just back from town, and things don't look so well. The people are pretty sore at you right now, and if they ever find this place . . . Well, it'd just be too bad. I think we ought to be ready to pull

out of here at a moment's notice."

Duvernet lifted his arm, then left it hanging there in the air, rigid, as someone pounded on the door. We looked at each other without saying anything. I walked across to the door, opened it, and stepped out into a crowd of five hundred blood-lusting men. I had been seen after all and followed. For a minute the silence was absolute, painful, stuffing the ears like high altitudes. Then,

"Well?" I said, for the lack of anything better.

The leader leered up into my face. "We know Duvernet is in that lab, Clark, so it won't help to stall. We're going to get him. But we ain't got anything against you. You're just an ignorant tool of his; we don't want to hurt you particularly. So if you're wise you'll drift away while you're able. As I say, we don't *want* to hurt you, but we won't *mind* doin' it if it's necessary to get Duvernet."

I thought again of Ammerman, struck down without even a fighting chance. But even more I thought of that indomitable little Frenchman, going without food, without sleep, day after day and night after night, struggling to save a people who sought to strike him down in a blind fury of revenge. So I said, "Come and take him, then," and sledged my fist into the fellow's face.

It was a great scrap while it lasted. I had partial protection by remaining in the doorway, as the building's walls projected almost a foot beyond the door. No more than two or three could get to me at one time, and they hampered each other. While all I had to do was brace myself against the door and pump in both hands as fast and as hard as I could. I did plenty of damage. Every blow found its mark on jaw or head. Blood spurted; men

shouted and cursed and groaned and went down to be trampled upon by their neighbors. It was only a matter of time, however, until the very weight of their numbers pinned me helpless to the door. They pushed in unison, hinges creaked, I gasped, and suddenly the door and I and part of the mob burst into the lab with a crash.

Moments passed, pregnant with unsaid possibilities. Duvernet stood quietly before his bench and looked at the ring of bloodshot eyes. Then, with a great sense of the dramatic, he made a little bow and said simply:

"Thank you, my friends. You are here just in time. I need you."

QUIETLY, yet with something very compelling in his voice, he went on to explain the situation he had just outlined to me, how he had his weapons all ready to shoot at the enemy, and needed only an army to help him launch his attack. His great problem was to find a quantity of newly-laid eggs, so that he could inject his embryo epidemic into the young fish without danger. Without these eggs he was helpless. And he thanked a benevolent God who put ready-made into his hands a sort of expeditionary force to help him in his time of need. In less than ten minutes, having directed their pent-up energies into safer channels, Duvernet had that mob, soul and body, his own.

From then on, things moved on oiled wheels. Directed by the Doctor and myself, our "army of deliverance" scoured the countryside for deposits of the huge eggs. By truck, by wagon, by wheelbarrow, by hand they poured into the laboratory, to be piled into crude incubators. Work was facilitated by the unbelievable speed with which the young fish developed. I

swear that by careful observation one could actually see the things grow, as in a slow-motion picture. Forty-eight hours saw them sufficiently large to inflict serious injuries. At that stage Duvernet passed out hypodermics and containers of spore-bearing solutions to a corps of assistants, who made their deadly injections, and the messengers of death were released.

Several of the men were radio technicians, and they managed to rig up a short-wave broadcasting magnaradio, over which details of the work in progress were sent to all parts of the country, and to the Orient. Scientists everywhere began to duplicate Duvernet's experiments.

At the end of the fifth day Duvernet collapsed on the laboratory floor from starvation and sheer exhaustion, and all work came to a halt. We were all badly played out and glad of the rest, so the remainder of our eggs were destroyed and we gathered round the radio for the news reports that came in at spasmodic intervals. A day passed, two, three. Then one morning an excited voice announced that the Scourge was dropping from the skies above Atlanta by thousands, as if stricken in mid-flight by some invisible force. Other enthusiastic reports came over the air from all parts of the country, blending in a veritable paean of exultation. Hour by hour the monsters were being wiped from the skies, literally raining their huge bodies over mountain, plain, and desert. And within three weeks to the dot, the Scourge of '82 was no more.

The revilement and vilification that had been cast upon the name of Duvernet was as a whisper on a desert isle compared to the world-wide acclaim and adulation heaped on the little Frenchman by a race hysterical-

ly grateful for his deliverance. Ride after triumphal ride was made down the main streets of every important city in America, with crowds roaring cheers and eulogy in his ears every inch of the way. Newspapermen, ignoring or scrambling mythology, hailed him as Prometheus, bringer of light to a shadowed world. The parade in New York made the half-century-old Lindbergh reception look like a rehearsal, with tons of ticker-tape and confetti literally snowing the pavements under, and millions of frantic admirers screaming their throats raw and fighting to get just a glimpse of the savior.

Duvernnet, of course, simply reveled in it. It was his element. Hand-shaking and gift-accepting and baby-kissing came as naturally and gracefully to him as if he had done it all his life. Everything, from the tiniest trinkets to a million-dollar trust fund offered by a well-known philanthropist, he accepted with the effusive graciousness of the French, and sent the donors away singing his praises to the skies. For a short space of time, there was nothing within the power of the American people to give that he could not have had for the asking. The Chinese, too, heaped oriental honors upon his head. The King of England acknowledged his great work in the preservation of Canada.

I didn't do so badly myself. There were plenty who remembered my small part in the great drama, and who insisted upon showing appreciation. One way and another, basking in Duvernnet's reflected glory, I found myself pretty well fixed before it was over.

The edge of this demonstration, of course, gradually wore off. Men and women returned to take up the normal burden of their lives. But Duvern-

net remained the greatest of all figures in the hearts of the people. He and I settled down in a beautiful mansion in Beverly Hills, but there was no peace, to real seclusion even then. Scientific journals hung on his every word; newspapermen, newsreel men, and photographers pestered him almost daily for interviews and pictures; would-be biographers slunk about the grounds like wild dogs, ears sticking out, on the alert for the slightest scrap of information.

AND from the very midst of this fairy-tale existence, came the news flash that stunned the nation—Doctor Duvernnet was dead, the victim of an accident in his own home. The American people, to a man, went into three days' mourning, by proclamation of the President. Business, pleasure, almost life itself came to a pause while the world paid tribute to a great man. Out-of-door services were held in down-town Los Angeles, and millions of grief-stricken men and women packed the great square and jammed the near-by buildings. Construction was begun immediately on a gigantic monument to his memory, eventually to rise five hundred feet into the air, crowned by a statue of Prometheus, with the features of Duvernnet, throwing off his chains and reaching out with one hand toward the sun. It was symbolic of the search of Duvernnet, and all mankind, for intellectual light.

Little mention was made of the accident. I simply made the statement to the press that I had found the body at the foot of the narrow and dangerous spiral iron stairway, that led to the upper floors in the back part of the house. The neck was broken. No one had witnessed the fall. But there was more to it than that.

Shortly after noon, I had gone upstairs to see if Duvernet wanted lunch. He had, of course, turned the whole third floor into a laboratory and spent most of his waking hours there. Just as I topped the stairs, he popped out of the lab. and rushed at me characteristically with a stream of excited language. He had discovered a rare species of tropical insect whose main defense mechanism consisted in the release of noxious fumes at an attacker. Duvernet claimed to have had results in isolating a hormone related to growth control. The fumes themselves were actually poisonous in a mild way, and there was no telling how deadly they might become with added volume. For no apparent reason, the Doctor was determined to carry out another experiment along the lines of his now-famous first one, though this time all precautions would be taken He went on, while familiar little red lights played tricks deep in his eyes.

I looked at the doughty little Frenchman whom I loved so much in my clumsy way, but my mind fled to the part. I remembered, despite "precautions," a world of half-darkness with the stench of slaughtered thousands hanging heavy in the air. I re-

membered children torn screaming from their mothers' arms and slashed to ribbons in the streets. I remembered a terror-haunted nation skulking in cellars and caves, afraid for their very lives if they dared step out to search for food. Even more I remembered Ammerman, my friend, raped of life with youth's bloom still on his cheeks. And I thought: this man Duvernet has drunk deep of everything life has to offer. He has lived completely, to the full. Whatever he does from this day henceforth cannot help but leave the sour taste of anti-climax in his mouth. Life has nothing more for him.

I looked at Duvernet again and smiled, and saw the startled intelligence leap into his eyes. A band constricted around my throat. He started to resist, one hand on the low, flimsy railing by the stairhead, then relaxed with a little gesture of surrender. And I like to think, though my sight was suddenly misty with something hot that filled my eyes and overflowed, burning, down my cheeks, that Duvernet's last earthly smile for me was an understanding and a forgiving one.

I pushed him over.

THE END



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PROBAK JUNIOR

"By Jove!"

By WALTER ROSE, L.D.S., R.C.S.

This is the second story with which we have been favored by this author, a resident of far-off Capetown. We feel that the subject is attacked at an unusual angle and our readers will certainly enjoy Dr. Rose's way of telling the story.

FOREWORD

THE discerning reader will not fail to note the extent to which this story owes its inspiration to one of Maurice Maeterlinck's charming books. Indeed except for the creation of the Crans and the Rotarians and some elaboration—less than may be supposed—of the scientific attainments of the Grak race, the descriptions of animal life on Ganymede owe less to invention than to natural history.

If efforts to avoid inconsistencies have not been entirely successful, at least I have not ventured to commit the solecism of giving to oviparous Ganymedans the alluring curves of lovely womanhood, a temptation that far more accomplished writers of "unearthly" stories have on occasion found themselves unable to resist. The consequent sacrifice of the "love interest" may be welcomed by those who consider that this aspect of literature is already amply if not over supplied.

Scientifically minded readers, who may be disposed to criticize the absence of exact astronomical and chemical calculations and formulae, will find all their wants fully supplied in Dr. Seymour Plant's narrative—when it appears.

W. R.

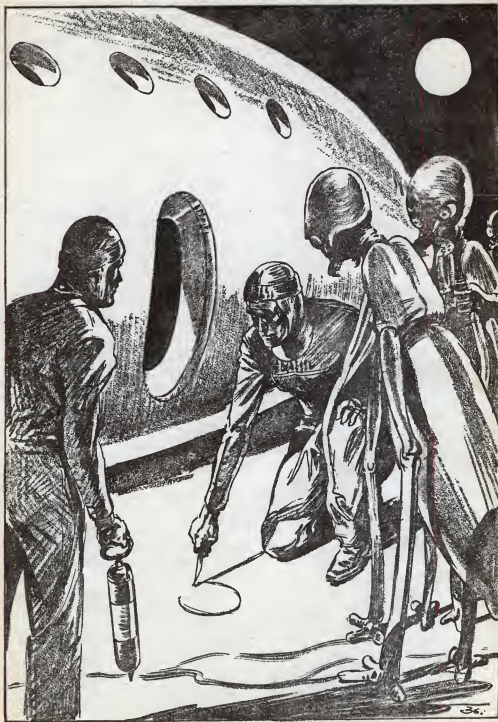
Newlands C. P. South Africa.
December, 1933.

PROLOGUE

WHEN we determined to set down in writing a full account of our astounding—I had almost written unearthly—adventure, it was decided that, instead of collaborating and producing a joint account, we should each tackle independently that section of the narrative for which his special tastes and knowledge best fitted him.

By this division to Seymour Plant fell the task of describing the conception, mechanism, construction and successful completion of our space-flier, "The Comet," that was to take us beyond the earth's atmosphere, beyond indeed the very limits of its gravitational pull into realms hitherto only visited by the imaginative excursions of restless minds.

To him also was allotted the description of the deafening, paralyzing start, when scores of rockets charged with "plantite," my friend's secret fuel that alone made the flight possible, sent our conical vessel shrieking beyond the stratosphere towards the unfathomable wastes of well-nigh empty space. Then the disastrous jamming of the mechanism by which we had proposed to shut off the supply of fuel to the rocket chambers on one half of the base of our machine, so that it would be directed in a vast parabola until again pointed earthwards; the agonizingly long



Plant shook his head in negation, then taking out his pocket-knife he drew a small circle on the hard earth, and by waving his hand around him, he sought to convey to the watchers that it indicated their planet.

helpless flight through the void, during which we laboured with long-deferred success to repair the injury; the vain effort to return and the final phase when half demented, starved and with barely enough plantite to arrest our fall we sank upon the surface of Ganymede, the largest of Jupiter's attendant satellites.

Only Seymour Plant, intimately conversant as he is with every technical detail of our space-flier's mechanism and management, could make a comprehensive and intelligible story of the start and culmination of our amazing journey. Also he has undertaken the scientific exposition of the important and interesting astronomical observations he made during the journey and our sojourn on that wonderful world over 400 million miles distant, as well as the summary of such of the highly advanced mechanical and chemical achievements of its inhabitants as he elicited.

I, Ronald Service, traveller, explorer and enthusiastic amateur naturalist, felt myself more fitted for the task of describing the strange inhabitants of that distant planet and the almost incredible adventures that befell us amongst them, before we were enabled to refit our machine and return across more than 400,000,000 miles of space to our own kindred on old Mother Earth.

My own section of our eclectic narrative has been finished long before Plant's, not because I am any the more industrious writer but mainly because his has been far the more difficult, involving as it does the inclusion of long tables of figures and formulae and carefully drawn plans; for it is not my friend's intention to keep the results of his inventive genius to himself. For the present, however, he has decided to reserve the secret of

the manufacture of plantite until such times as the special Government Department for the Control of Interplanetary Flight has completed its machinery for the restriction of such to responsible parties.

In order therefore that he might feel himself at liberty to take his time over the elaboration of his own narrative, without feeling that he was holding mine up, he has persuaded me to publish my half to the world, whilst the excitement resultant on our amazing journey and spectacular return remains unabated.

CHAPTER I

MAROONED ON GANYMEDE

I WILL commence my account of our adventures on distant Ganymede with the moment that found our space-flier, lying undamaged but useless on the border of an open plain of a deep yellow colour, close to a steep cliff that formed the lower rampart of a range of lofty and amazingly precipitous mountains which in marked contrast to the level ground were of that brownish-purple colour known as puce.

That we were on one of the satellites of mighty Jupiter we were well aware, as for hours we had been consumed with anxiety lest we should be drawn into the irresistible gravitational pull of the giant planet and by it to inevitable destruction.

It was only the million to one chance of our meteor flight bringing us into comparative proximity with one of Jupiter's attendant moons and the frantic expenditure of more than half of our remaining plantite, that had averted the threatened cataclysm and given us a fresh lease of life, however precarious.

Now above us, visible through the foot-thick sheet of toughened glass that was set in the side of our vessel, and illuminating the whole landscape with an intensely bright light, gleamed the huge planet, 200 hundred times the visible size of our moon-disc, its apparent diameter about one twelfth that of the vault-sky, which last the adjacent steep cliffs limited by one third.

We had not at the time the vitality nor indeed the desire to observe more than this, for we were well-nigh dead from famine, thirst, mental stress and physical exhaustion, and had it not been for the greatly reduced weight of our bodies resulting from the relative smallness of the world on which we had landed, it is probable that we would have found ourselves unable to move hand or foot to avert the death that could not have been delayed for more than a few hours.

Plant was the first to move and with the awkward movements provoked by the strange lightness of his body, for on our long flight our terrific acceleration had held us by a force greater than that of earth's gravity to the floor of our vessel, he made his way to the tightly screwed and hermetically sealed door that had for days stood between us and the airless void of space. Seeing his intention, in a husky whisper I queried what would be our fate in the event of this strange world being airless and maybe of more than Arctic coldness.

"An instantaneous death, instead of one deferred for a couple of hours at most," was his answer. "Our oxygenating and air-purifying apparatus is practically depleted," so far the stout fellow had kept this last straw of bad news to himself, "so even if we

had food and water, we would have to take the chance."

When the last bolt was unscrewed, he came over to where I was crouching. "Just in case of the worst happening," he said, holding out his hand, "Good bye, Ronald, old man, and forgive me for having brought you into this. I was too confident of the success of my invention."

I gripped his hand, "Forgive be hanged, old chap," I croaked. "I wouldn't have missed it for anything. 'One crowded hour of glorious life' sort of thing, you know. Come, let us see if our luck still holds." And scrambling to my feet I lurched towards the door.

Weak as we were, it took our united strength to swing ajar the heavy slab of metal and we collapsed to the floor exhausted.

Next moment we were coughing and choking in the wave of strange scented air, for air it undisputably was, that came from without. Perhaps it is lucky for us that it only slowly displaced the vitiated atmosphere of our metal home, as its sudden undiluted effects might have been fraught with serious results.

As it was, we lay gasping and panting with labouring lungs and streaming eyes for nearly half an hour before we could breathe in comfort. Afterwards we learned that the oxygen content of this new atmosphere is appreciably higher than that of earth, also that a new element, unknown to us, is present, giving the air its peculiar scent and wonderfully invigorating property.

(Later we found that volumetrically the atmosphere of Ganymede consisted of Nitrogen 73.4%, Oxygen

24.5%, a new element, Nigrón* 2.1%, CO₂, moisture, etc., traces.)

WHEN once our lungs had become accommodated to this new atmosphere and the violent racing of our hearts' action had somewhat abated, we made our way gingerly through the open doorway to the bare saffron-coloured earth—if purists will not cavil at this term—that stretched before us.

As I am convinced that a continued reference to the remarkable lightness of our bodies owing to the smaller size of the planet on which we stood and the difficulties we experienced in walking and especially in jumping, until our earth-trained muscles had become accustomed to the change, would become wearisome to the reader; I will content myself with a primary statement of the fact and will not, except in a few specific cases, again refer to the matter.

Afterwards Plant worked it out carefully and found that although our new home had a diameter of less than half that of our earth, (about 3500 miles) which should have made us approximately one ninth of our terrestrial weight, the relatively high specific gravity of Ganymede namely 8.49 made our apparent weight on its surface just one-sixth of what it was on the earth. This meant that we each weighed in the region of two stone (28 pounds). (For the precise calculations see Plant's narrative.)

It did not take us long to realise that our movements only required one sixth of the normal muscular effort

and after a few minor and somewhat laughable mishaps, we learned the knack. (But, oh, the terrible weariness of the first weeks following our return to earth.)

As we sat on the yellow soil beside our flier, Plant carefully scrutinised the sky in an effort to determine exactly where we were. Almost directly overhead in a vault that blazed with stars, glowed great Jupiter, three-quarters of his disc catching the light of the sun 500,000,000 miles distant. This, his reflecting power being three times that of our moon, he cast back with about 18 times her intensity. No words can describe the majesty of his appearance, or portray the range of colours that swept across the glowing globe, though from the scientific standpoint Plant's exposition leaves little to be desired.

Close to the horizon, gleamed with a bluish tint the full orb of a moon, somewhat smaller than the earth's satellite, whilst higher in the heavens and smaller still on account of its greater distance, a bright world showed like its giant comparison, three fourths of its orb. This last had a distinctly reddish colouration.

"That will be Callisto," pronounced Plant after a while.

"It is now something over a million miles beyond Jupiter. The large blue one is either Io or Europa. If it is the former then we are either on Europa or Ganymede. If that is Europa, then it follows that this is Ganymede, so the odds are in favour of our being on Ganymede."*

*This was confirmed when a few days later Europa's blue disc swept into view. During our sojourn on Ganymede, Plant made profuse and most valuable notes on the orbits, eclipses, transits and occupations of Jupiter's four chief and five tiny satellites and of the nature of that giant planet's coloured belts.

These notes, carefully checked and annotated by a committee of eminent astronomers, will shortly be published under the title of "The Jovian System from Within."

*Though his discovery was made much later, it may here be noted that Plant ascertained that this new gaseous element, though chemically inert, possesses distinct radioactive properties. He placed it in the seventh period, group VIIIb of the Periodic Table with the atomic number 94. The name Nigrón given to it was suggested by the fact that when isolated it shows a distinctly blackish hue.

"What does that mean exactly?" I enquired.

"It means that we are about 400,000,000 miles from home, and some 670,000 miles from Jupiter on a satellite just over 3500 miles in diameter, which circles its parent planet once in a little more than seven days."

"By Jove!" I cried with unconscious appropriateness. Plant always contended that this was the best pun I have ever made. "Then we should get a day and night each of about 84 hours duration?" I continued, when I had digested his information.

"Yes, if our planet keeps its face continually towards Jupiter as our moon does towards the earth, as most astronomers suppose. If it revolves on its axis at a different speed, the figures will be very different and will vary considerably with Jupiter's year, if Ganymede's axis is at all tilted. It is doubtful however if the sun's light will be very much brighter than what we are getting from Jupiter, as he will have only one twenty-seventh of his earthly power."

"In that case, why are we not frozen to death?" I queried.

"Apparently because, as has been suspected, Jupiter gives out a considerable amount of heat of himself, quite apart from the small amount he reflects from the sun. This will give our present home a practically constant temperature, especially if the surface we are on continues to face our great neighbour.* That also will mean a practically constant intensity of light, for Jupiter will wane and wax directly as we are turned to and away from the sun."

*This proved to be the case except that careful observation showed a regular oscillation of about three degrees each way. Thus the moon's day is about four weeks long.

"Then we will have no dark at all?" was my next question.

"We will have a short period once a week when Jupiter comes directly between us and the sun, a solar eclipse in fact."

"What do you think of the chances of this world being inhabited?" I queried next, impelled by my gnawing feeling of hunger.

"The climatic and atmospheric conditions seem favourable to life, though there is a disturbing absence of signs of water and vegetation. Of course we may have landed in the middle of our planet's Sahara, though one generally looks for streams of some sort near mountains. The noticeable dryness of the air and the complete absence of clouds are not encouraging features."

"Is it supposed by astronomers that there is water on Jupiter's satellites?" I asked next.

"Several observers claim to have seen ice-caps on Ganymede and also channels or canals similar to those alleged to appear on Mars and for that reason are inclined to think that the two planets are similarly irrigated. Others however have been unable to satisfy themselves that such things exist on either planet."

"Well," I commented, "unless we get food and water soon we cannot last much longer in spite of the recuperating property of this air. So I propose we do a little exploring whilst we can manage it."

Much the better for our rest, we rose to our feet and started to walk gingerly towards the puce-coloured precipitous cliffs that towered skyward about four hundred yards away. We had covered but half the distance when Plant clutched my arm.

"Good Lord, Ronald," he cried, "this place is inhabited. Look there."

CHAPTER II

A DESPERATE ENCOUNTER

EMERGING from behind a hillock, a hundred yards or so to our right, appeared a dozen of the strangest creatures that I had ever seen, despite my many wanderings into the unexplored regions of the earth. Though of the same general appearance, these beings displayed considerable variations in form and especially in size.

Three of them were much larger than the other nine and appeared to be leaders. The nine smaller creatures—Ganymedans as we mentally called them—stood about four feet in height and presented a segmented body curiously suggestive of an earthly insect. The head, that was freely movable, had a hard shiny appearance and was furnished with a pair of small pincer-like jaws that functioned from side to side instead of up and down as our jaws do. A pair of large bright eyes lent a not unintelligent expression to the face, if I may use this term.

To the next segment, which also was armoured with the same shiny covering, were attached six limbs set in pairs one above the other. The two upper pairs, jointed and freely movable, terminated in a gripping organ like a three-fingered hand, except that the digits were multijointed and extremely flexible and were set like a three beaked pliers.

The lower pair of limbs were much stouter and were apparently used only for walking, for they were less mobile and had the digits modified into stout toes, having something of the appearance of a very squat and sturdy camera tripod.

The third section, which seemed to constitute the abdomen, was not armoured in any way being covered only

with a thick skin. At its termination a curious knob-like projection appeared, to which reference will be made later. The colour of these creatures was a dull slate-grey.

Two of the three larger Ganymedans somewhat resembled their smaller companions in general outline. They were, however, nearly six feet in height and had heads very much larger in proportion, whilst the size of the jaws was really prodigious. The eyes were somewhat smaller and were deeply sunk in the helmet-like armour of the head. The fore-limbs were also stouter and the treble digits stiffer and more claw-like, whilst the lower limbs were similarly thickened to accommodate the much greater weight. The abdomen, which was devoid of the terminating knob, was protected by armour as far as the front or ventral aspect was concerned, but dorsally was covered only by thick skin.

The third of this larger trio, though resembling his comrades in all other respects, had a head of a most grotesque, almost ludicrous appearance. It seemed as if some jester had removed his head and set on his shoulders a huge pear with the stalk pointing upwards. Near the base of the stalk a small opening, probably the mouth, could be discerned, whilst a pair of bulging eyes were situated laterally at the widest part of the pear-like bulge.

The colour of these three large Ganymedans was a blueish purple, the one with the pear shaped head being a lighter shade than his large-jawed companions.

Although they made no overt signs of hostility, the general appearance of these creatures was so terrifying and macabre that with one accord we

both turned and fled towards the comparative safety of The Comet, our vehicle.

OUR return journey did not display any of the careful calculation of our earlier gait, but was accomplished by a series of awkward but prodigious leaps that occupied a few seconds only. It was only when we leaned panting against the side of our flier that we turned to see if we were being pursued. We were surprised and slightly disconcerted to note that the new-comers, instead of attempting to follow us, were gathered in a cluster waving their arms—if I may use the word—and evidently discussing our strange appearance and flight and presumably speculating on our nature and that of our shining vessel.

After a few minutes spent thus, they began to advance slowly towards us, the three larger ones in advance of the others.

"Keep near the door ready to hop in in case of necessity," counselled Plant. "They may not intend to harm us, but we will be on the safe side."

When within fifty yards from us the nine smaller creatures stood still, whilst the three leaders approached us slowly, but with no sign of hostility beyond their naturally terrifying appearance.

"Get ready to climb in," whispered Plant making a cautious movement towards the doorway.

Evidently the advancing trio noted the movement, for they at once stood still and began to move their huge heads and fore-limbs as if making signs, at the same time uttering a curious whistling, creaking sound which appeared to have the nature of speech and was, as we afterwards discovered, made by the rubbing to-

gether of different joints of their mail-armoured bodies.

We replied by making vocal noises, which we hoped would sound friendly, and by waving our arms about, pointing first to our ship and then to the sky and making movements to imitate an aerial flight.

What appeared to be another consultation again ensued between the three Ganymedans, or Graks as we afterwards learned to call them.

"We seem to be making some progress," I whispered. "They certainly do not seem particularly hostile, but I wish their jaws were not so beastly formidable-looking. I wonder what they will do next."

This query was answered by a sudden hullabaloo from the nine smaller creatures in the background, the reason for which a single glance in their direction explained.

Close upon them and advancing at a rapid pace, we sighted another type of the remarkable denizens of this strange world.

About the size of a leopard, but standing higher from the ground and proportionately longer in the body, they covered the ground by rapid movements of their six jointed legs. Their bodies, like those of the Ganymedans, were divided into three distinct segments. The first of these constituting the head, was large, furnished with a pair of whitish coloured eyes and was armed with a formidable pair of jaws in addition to a cruel-looking mouth that continually gaped open and snapped hungrily. To the middle segment were attached the legs, which terminated in a pair of long curved claws. Both these segments were completely encased in a continuous integument, smooth and shiny and with the hard impenetrability of plate-mail. The third seg-

ment was more bulky and was covered by six overlapping bands of somewhat thinner armour, and terminated in a protrudable sting, a foot long, sharp as a needle and tubular to permit the passage of the poison from a large bag at its base. (This organ we were able to examine in detail later).

Imagine six of these monsters of a vivid vermilion colour, their large white eyes gleaming with a savage expectancy, approaching at the speed of a horse's gallop and you will admit that the nine smaller Graks had every excuse for raising a cry for help.

THE battle, if such it can be called, was of brief duration, for before the three leaders could come to the aid of their fellows, the six raiders (we learnt later that the Ganymedans called them Krugs) were upon them, slashing and shearing right and left with their sabre-like jaws.

Five of the smaller Graks were ripped open at the first charge and although the other four defended themselves stoutly, even gripping on to the attacker's legs with their puny jaws, the latter had no difficulty in tearing off, holding them down with their clawed feet and calmly decapitating them.

The three large Graks, too late to effect a rescue, formed up back to back and prepared to resist the combined attack of their six terrible foes. This was not long delayed.

Spreading out so as completely to surround the three thus at bay, the Krugs made a combined charge as if to finish the encounter by a single onset. Here for the first time we saw explained the reason for the singular pear-shaped head and pointed snout of one of the Graks, for as soon as his immediate opponent was within

five or six yards of him, he pointed at him his projecting snout and liberally sprayed him with a jet of fluid that almost immediately coagulated into a viscous glue-like consistency and brought the attacker to the ground writhing and helpless. The other two were now hotly engaged with their foes, opposing jaws to jaws and mail to mail, the attackers, who scorned to use their stings on the smaller Graks, now manoeuvring to bring these formidable weapons to bear on the unarmoured areas of their larger adversaries' abdomens. Meanwhile the other opponent of the syringe soldier, as I mentally called him, had adopted new and more deadly tactics. Making a sudden forward rush, he deftly side-stepped the anticipated discharge of fluid, then gave a prodigious leap into the air and came down in the midst of the clustered trio.

Before the syringe soldier could turn to meet this unexpected assault, the deadly sting was plunged deep into his abdomen killing him instantly. At that moment one of the other Graks succeeded in slicing the head from one of his opponents and turning quickly performed a like office for the slayer of his comrade before he had time to disengage his sting from the other's carcass.

"Bravo!" cried Plant excitedly at this feat of arms. "That is the stuff to give them."

We cheered too soon, however, for before the Ganymedan could follow up his victory, the two uninjured raiders rushed at him together, swept him off his feet and plunged their lethal stilettos deep into his vitals.

That left the odds very heavily against what we had come to regard as our side, for although one of the marauding six was wounded, one ren-

dered helpless and two killed, their heroic slayer was left to face the combined attack of three enemies, two of them so far unhurt.

"Come on, Ronald, we must give that chap a hand," cried Plant. "Oh, for a pair of automatics. Hurrah! I have it," and leaping into the flier, he emerged carrying one of the chemical fire-extinguishers we carried clamped to the wall.

By this time the lone warrior was undauntedly facing his three enemies, or rather striving to face them, for leaving the partly crippled Krug to engage his attention in front, the other two were manoeuvring to approach him from opposite sides.

Despite his prowess, the fight could not have been of long duration, had not Plant come on the scene with his novel weapon. Had there been any doubt in my mind as to the effect of the chemical on the Krugs, it was speedily dissipated by the result of Plant's attack.

No sooner did the jet strike the first one than he collapsed flat on his back, where he lay with his legs jerking spasmodically in the air, until in a few minutes all movement ceased. Without waiting for his first foe to stop kicking, my friend turned his lethal spray on to the other uninjured Krug, sending him likewise into a convulsive death dance.

Recognising Plant as an ally, the surviving Grak strode up to the disabled foe in front of him and after a little preliminary sparring, deftly sliced off his head. This accomplished, he turned to us, holding aloft his forelimbs, gave vent to a series of whistling creaks of an obviously friendly nature.

We copied him as best we could by raising our hands aloft, the while

Plant whistled a few bars of "Lead Kindly Light." Whether our new comrade in arms recognized any rhythm in the tune I cannot say, but that the import of our performance was evidently satisfactory was shown by his whole demeanour.

"Well, that is something settled at last," exclaimed Plant. "We at least have one ally on this strange world and if I am not mistaken we shall soon need one. Look yonder."

CHAPTER III

INTO THE MOUNTAIN

FOLLOWING the direction of his nod, my gaze encountered a compact body of some fifty or more of the large Grak warriors amongst them a dozen or so syringe-soldiers, followed by about a hundred of the smaller type. Prudence directed our steps back to the doorway of the flier, but we had no need for alarm.

Seeing the approach of these reinforcements, which had been sent, as we learnt later, as a result of sentries on the cliffs having observed and reported the fight, the survivor thereof turned to meet them and what was obviously an animated conversation ensued, as was evinced by the excited waving of limbs and the whistling and creaking that went on.

After a few minutes spent thus, our Grak and three of the new arrivals, evidently leaders, drew near, making what we now understood to be signs of friendship, which we returned as before. Then one of the newcomers cautiously approached our flier, felt its smooth metal surface and looked inquiringly at us.

Guessing his meaning, we entered the flier, and closed the door; then emerged again and pointing to the

sky made signs as before to indicate aerial flight.

Our interrogator, as I may term him, thereupon pointed to Jupiter, making signs which evidently were meant to ask if it were thence that we had come.

Plant shook his head in negation, then taking out his pocketknife he drew a small circle on the hard earth, which, by waving his hand around him, he sought to convey to the watchers indicated their planet. About a foot distant, he drew another much larger circle, which he signified that he meant to represent great Jupiter overhead. Then pacing off about 130 yards, followed by me and the interested quartette, he drew another smaller circle and by pointing to himself, to me and to the flier, tried to make the others understand that our source of origin was at an immense distance away.

These people—if I may use the term—were evidently of quick intelligence and not ignorant of astronomy, for they appeared to understand his meaning and seemed satisfied.

Taking the penknife from his hand they examined it with interest and returned it to him. They next gave their attention to the empty fire-extinguisher, the effects of which our ally obviously explained to them, pointing out the two Krugs that had been killed by its agency.

We now thought it time to draw attention to our imperative need for food and drink, for, despite the sustaining effect of the Ganymedan atmosphere, the lightness of our bodies and the excitement of the last half hour, we were on the verge of collapse. We accordingly sought to make them aware of our needs by pointing first to our mouths and then to our

stomachs and making signs as of chewing food and drinking.

Evidently we were understood, for the Graks made signs for us to accompany them. This we proceeded to do, having first entered the flier and stowed away in our pockets a number of articles which we thought might prove of use, afterwards carefully closing the door of the vessel. On an order from one of the leaders, the company of smaller chaps, who seemed to fill the part of labourers, proceeded to gather up the dead of both sides. We noticed that the victim of the syringe-soldier was now also dead and partly encased in a completely hardened glue-like medium.

THEN with ourselves and the warrior leaders in the van, we set off towards the hillock in the vicinity of which we had first seen the Ganymedans. Passing around this, which was of the same dark puce colour as the cliffs, the leader knocked in a peculiar manner on its side. Immediately part of the hard hillside slid away, revealing an open passage-way into which we were invited by signs to enter. Instinctively we held back, then on the signs being repeated we put our hands to our eyes, which we closed and, stretching out our arms, made a few groping, stumbling steps so as to show that we were dependent on our eyes for safe walking. Again we were at once understood, for each of us was gently seized by either arm by a couple of Graks and led into the passage.

Helped as we were by our friends, as we were now determined to regard them, to whom the darkness made no difference, we made rapid progress in a direction mainly upwards through what seemed miles of winding passages, until to our relief, we entered

a chamber illuminated by the light of Jupiter that streamed in from a large aperture in one wall, beside which stood a large-headed soldier. Understanding that our journey was at an end for the present, we thankfully reclined on the ground and again made signs indicating our need for food and drink.

However our wants had already been noted and the necessary orders given, for a few minutes later several small Graks appeared carrying various articles of diet.

These consisted of cakes of a sweetish-tasting substance, quite unknown to us, but singularly satisfying and invigorating, and, oh blessed sight, actually water contained in vessels of a hard earthly material, similar to that composing the floor on which we sat but very smooth and polished. It had an unfamiliar tang, but was more than welcome to our parched bodies and, having emptied the vessels, we signed for a further supply to be brought.

After our meal we felt a strong desire to smoke but found that we had left all our matches in The Comet. Though we were inclined to bemoan the fact at the time, our oversight was in reality a piece of amazing good fortune, for we were not then aware of the extraordinary inflammability of the material—largely organic—from which the bulk of the Grak buildings are constructed. A carelessly discarded cigarette end and our lives and the lives of the whole vast population of Grak communities would have been sacrificed. Also the whole future of Ganymedan, maybe as I will show later of the entire solar system, would have been changed in consequence.

Our signs that we desired to go to sleep were at first not comprehended; we found later that the Graks never

sleep as we understand the term; but, with that quickness of perception that distinguished them, they divined our intention and left us to ourselves except for a single labourer, who by signs they indicated was there to obey any orders we might give, and the sentry at the window.

Noting the time by our watches, which we were careful to wind, we stretched out on the bare ground and in a few minutes lapsed into the dreamless sleep of utter exhaustion.

WHEN I again opened my eyes, I espied Plant sitting up beside me, busy on another meal of the sweetish cakes. This reminded me that I was again ravenously hungry. I lost no time helping myself to a handful.

"There doesn't seem much staying power in this diet," I remarked glancing at my watch. "It is barely five hours since I ate as much as I could and now I am as hungry as ever."

Plant went into a roar of laughter.

"Five hours did you say? Seventeen hours you mean," he cried, showing me his watch. This was of the type with the dial divided into twenty-four hours, recording also the days and months, and clearly proved the truth of his assertion.

"Seventeen hours! Are you serious?" I exclaimed, starting to my feet with an alacrity that would have sent me violently against the roof of the chamber, had I not remembered in time the need for cautious movements in our strange new home. "Well, we deserve it anyhow. We had a pretty tough time of it yesterday, or was it the day before? No wonder I am hungry."

Sending our little servant for more food and water, we walked to the window in the wall and looked out across the saffron plain that stretched some

ten miles wide, about a thousand feet below us. It was probably from this or some similar look-out post that yesterday's fight had been observed and the alarm given, resulting in the reinforcements being sent.

With the aid of a pair of binoculars, which was amongst the things we had brought with us from the flier, we carefully surveyed the open ground and the mountains that bounded its opposite side. These latter, which we judged to be somewhat lower than the one in which our room was situated, unless we misjudged the distance, were of the same brownish purple colour and precipitous nature.

The yellow-hued plain was fairly level except for several purplish hillocks not far from the base of the cliff and what appeared to be a large depression in the centre. As far as we could see it was quite devoid of vegetation of any kind. Some red objects, which at first we took to be clumps of bushes, proved to be small bodies of Krugs that approached so close to the cliff on which we were perched that we could distinctly make out their individual characteristics. That these savage creatures were subject to strict military discipline was suggested by their manner of marching. Each detachment was formed of twenty five warriors marching five abreast in five ranks. When desiring to wheel right or left, each individual soldier made a half turn in the new direction, so that the ranks became the files and the files the ranks. Though these movements were executed with the utmost precision, I could not distinguish any definite leader, and was inclined to find the explanation in that curious mass telepathy that appears to actuate flocks of birds and shoals of fish that wheel and turn in abso-

lute unison. Later I saw large regiments numbering many thousands acting in a precisely similar manner.

Of The Comet we could see no sign and concluded that it was concealed by some bulge of the cliff.

CHAPTER IV

ADVANCED SCIENCE

OUR inspection was interrupted by the return of our little servant with more food and water, to which we gave our attention. Whilst we were thus engaged, five other Graks entered the chamber. One of them was of the soldier class and was, we thought that warrior who had so distinguished himself the day before. The resemblance of the Graks to one another, within their classes or castes that is, was so great and their "faces" so utterly devoid of expression that for the most part we found it impossible to tell whether an individual we encountered were a complete stranger or one that we had seen scores of times. I had noted a somewhat similar difficulty on my first visit to China. Later we were able to recognise a few individuals, including this warrior who was attached to us as our bodyguard and whom we referred to as Kleek from a sound which to our inexperienced ears he seemed on our first encounter to be continually repeating. We learnt later that the word expressed the idea of stranger, newcomer, or intruder to the thought impulse that accompanied it. Among the Graks individual names are unknown.

Our other four visitors were of a type different from any we had yet seen. Of the same general build and height as the labourer class, their

bodies were a dull grey and quite unarmoured except for a narrow band where the head joined the neck. The digits were extremely long and delicate. The head was slightly larger than that of the soldier, but was only thinly encased and was devoid of jaws of any kind. There was a relatively tiny mouth and a pair of eyes small and mounted on extensible stalks like those of a snail. From the completely defenceless nature of these beings and the large size of their heads, we assumed, correctly as transpired, that they represented the scientific or intellectual class, who were known as Crarns.

They stood silently in front of us whilst we were eating, but from the position in which they held their eyes it was obvious that they were observing us intently. When we had concluded our meal, one of them approached and signing to me to open my mouth, astonished and somewhat alarmed me by putting one of its extensible eyes therein, presumably in order to examine this, to him, novel eating apparatus. The recollection that I had not cleaned my teeth since we left Earth induced a distinct sense of self-consciousness and a feeling that I ought to apologise, in spite of the fact that this intimate intra-oral inspection was entirely the other's own idea.

At last when the itching to laugh or cough, despite the direness of the consequences, was becoming well-nigh intolerable, the scientist concluded his inspection and moved toward Plant as if to make a like examination.

It so happened that my friend was in possession of full upper and lower artificial dentures and, having noted the ordeal through which I had passed, hurriedly removed them and held them out for inspection.

READERS of that masterpiece of adventure fiction, "King Solomon's Mines," will remember the alarm caused to the Kukuanas by a similar feat on the part of Captain Good. Surprise apparently was not a Ganymedan emotion, for the Crarn's sole response to Plant's action was to turn one of his eyes towards the dentures and the other in the direction of the owner's bare gums. Having made signs for the teeth to be replaced, he stretched out a forelimb and with his long mobile digits removed them for himself. After a careful examination he handed them back and turning again to me tried in a similar manner to remove mine. After several unsuccessful attempts, which I endured as stoically as might be, he seemed satisfied and retired to where his brethren were standing.

Another of the scientists then advanced accompanied by Kleek, who, obviously at the former's desire, proceeded to make noises similar to those he had made on first greeting us. Now we were close to him we saw that the sharper sounds were made by the rubbing together of the joints of the limbs, the deeper noises being produced by the grinding of the base of the head on the upper edge of the mail corselet.

Divining the purport of this performance, we commenced to talk, shout, sing and whistle while the mobile eyes intently followed every movement of our throats, lips and cheeks. To assist the Crarn's investigation, which we hoped might eventually lead to some means of communication being established between us, Plant and I stepped back a few paces and then started to turn about to address one another, the listener in each case pointing to his ear to convey the idea that it was by means of these or-

gans we were able to hear sounds.

Comprehension by the watching scientist was immediate, for he at once approached and inserted an exploring eye into one of my ears. To help his understanding of our hearing mechanism, I took up an empty drinking vessel and, stretching part of my handkerchief over it in the manner of a drum, I tapped the taut fabric once or twice with my finger tips and then pointed to my ears in the hope of conveying the information that my hearing depended on a similar device.

That we were dealing with a trained intelligence was manifested by the readiness with which this crude analogy was understood. By pointing to my rough tom-tom and then to a spot on his chest between the upper pair of limbs, the Crarn indicated the situation of his own auditory organ.

It was now the turn of the third intellectual, who having signed to Plant to approach the window and look out, protruded his eyes into the proximity of the other's in close examination. He then turned him to face inwards and made another inspection and finally signed to the sentry to close the window, which was done by means of a closely adapted, sliding door which we now saw for the first time. We came to the somewhat obvious conclusion that a similar scrutiny was made in the dark, for all Ganymedans can see just as well in the dark as in the light, in many cases even better.

When the light had been readmitted, the fourth Crarn, whose head was even bigger than those of his fellows; advanced and, taking me first, spread the flexible delicate digits of his two upper limbs across and around my cranium whilst with his second pair he offered to my gaze

various articles such as the earthen vessels, some of the cakes, my handkerchief etc. whilst he appeared by the pressure on my head to be trying to sense my mental reactions. Maintaining his hold, he then led me to the window and signed me to look out at the open plain and the patrolling Krugs. Having repeated the same performance with Plant, he rejoined his fellows and after what appeared to be a brief discussion the whole party withdrew.

WE were not left for long to our own devices, however, for in a few minutes another party of intellectuals entered. We concluded that it was a different party, as that was the more reasonable hypothesis, but as far as appearances were concerned they might well have been the same Crarns back again. Leading us to the window one of the visitors pointed first to us and then towards the sky making signs similar to those made by the soldier leader the day before to enquire whence we came.

This time Plant made a fuller explanation by taking out his notebook and drawing a very presentable sketch of the solar system, with special reference to the Sun, the Earth and Jupiter and his moons. Though apparently the art of drawing was quite unknown on Ganymede, such was the flexibility of the trained intellects with which we had to deal that his meaning was soon comprehended though, as we afterwards found, the Crarn's knowledge of astronomy is far inferior to their skill as chemists and, within certain limits, as mechanics.

After this second party had withdrawn, we had no further visitors for a while, so we took advantage of the opportunity to record in our note-

books the events of our last adventurous days, with the allocation of themes to which we afterwards adhered.

This occupation, punctuated as it was by repeated discussions in which we compared notes and correlated our mutual impressions of events, and by another meal, occupied several hours; after which we had another long sleep.

When we again awoke, our attendant and the sentry were still at their posts, they may of course have been changed, and we at once sent them for more food. I may here mention that our diet during our stay on Ganymede did not vary in the slightest degree, except for certain fruits which we afterwards obtained, and, although on superficial reflection it may seem paradoxical, it was only during the first days that it impressed us as monotonous. After a while it became such a matter of normal routine that our earlier meals on earth tasted strange and unpleasing. Incidentally they induced acute dyspepsia.

Having brought our notes up to date, we were beginning to feel bored by inaction, when our scientific visitors of the previous day—as we deduced they were—accompanied by Kleek, paid us another visit and introduced us to what was perhaps the most striking demonstration of Ganymedian science that we experienced during our whole sojourn on that strange planet.

One of them carried two shining black head-gears greatly resembling aviators' helmets made of a material the exact nature of which we were never able to ascertain. These they adjusted to our heads, where they fitted snugly and comfortably, covering the whole skull to below the ears. Now came the marvel.

"Welcome to the land of the Graks, Travellers," said the leading Crarn.

I started and looked at Plant in amazement. From the astounded look on his face, I could see that he too had heard the same words. Rather should I have said that he had got the same message, for when the first shock of surprise was over, we realised that the words had been received by our brains rather than by our ears, the transmitting medium being undoubtedly a form of telepathy.

This applied to the conveyance of all abstract ideas amongst the Ganymedans. The names of definite concrete objects were conveyed by the joint-interfriction sounds I have described and were received by the thoracic auditory organ.

For that reason all Ganymedian objective names would, by us, be phonetically rendered by groups of letters representing grinding, squeaking, or clicking sounds, though such rendering would in the majority of cases be only approximately correct.

In some wonderful manner these amazing creatures had been able, after their brief study of our sensory faculties, to construct an apparatus that enabled their messages to be received by our brains as coherent ideas. As might be expected, the earlier appliances proved capable of conveying ideas along but a limited range. From time to time, as the need was noted, fresh apparatus was supplied until by the end of our stay the most involved explanations could be comprehended and intricate discussions carried on.*

*These appliances, which we brought back with us, have been carefully examined and tested by a special committee of physicists and radio experts. Their report, which will appear in the form of a Royal Society paper, will in all probability completely revolutionise our methods of radio transmission to the extent of entirely abolishing our present expensive high-power stations and towering aërials.

IT thus ensued that most of our information concerning the complicated civilisation of the Ganymedans was elicited gradually with continual amplifications and corrections, though, to avoid wearying and confusing my readers I always give the complete and amended information with this intimation only of its gradual and painstaking acquirement. Let us however continue with my narrative.

Although, as I have stated, surprise is not a Ganymedan emotion, the Crarns must have received an impression of our mental state, for the next message came:

"We are glad that you understand us, as we wish to hear more of the country from which you have come. We wish to know how you came to the land of the Graks." Country, land, place, city, community, world, etc., are all indicated by the same thought-form with the click-sound "ok." In my renderings I use the word applicable to human ideas and similarly with other sound or thought stems.

I got mental suggestions that Plant was "thinking" to them a rough description of The Comet and our journey, though to me his message was very fragmentary. Later after long practice and with our improved head-gears, we were able to converse readily without speech, using that medium solely—as we did with the Graks—for the sounding of the names of definite objects when we sensed that comprehension was incomplete.

When we got accustomed to the idea of telepathing, we practised sending messages at continually increasing distances, until we reached the stage when we could send out calls from many miles distant; though we never reached the high degree of receptivity possessed by the Crarns.

Plant having intimated that he could explain about the flier better by a demonstration of its mechanism, we were treated to another surprise. With his delicate digits, one of the Crarns manipulated our head-gear, causing a sort of visor to fall down in front of our eyes. He then signed for the shutter to be drawn across the window. To our amazement after a few seconds we were able to see just as clearly as if the light had not been cut off.

The Crarn then raised the visors and all was Stygian darkness, which vanished on their replacement. Here now was another and most useful science this ancient civilisation had evolved.*

WE were now able to accompany our guides along the maze of passages that ramified, branched and twisted in all directions, without having to be led by the arm.

We passed enormous numbers of Graks of all types, the vast majority of which were labourers, some empty-handed but most bearing burdens of some sort, all hurrying about their allotted avocations with single-minded intentness. None of them took the slightest notice of us, as far as we could see.

Stationed at intervals, we noticed a type that we had not yet seen. These were of the same build as the soldier class, except that they were somewhat smaller, had the jaws less developed and the eyes larger. In colour they were light brown. They appeared to play the part of overseers over the labourers that hurried to-and-fro. At what might be termed important

*Although our mundane optical experts have not been able as yet to devise a similar appliance, valuable data bearing on the subject of infra-red photography have been secured.

street intersections their duties seemed to approximate to those of traffic police.

Although most of the subways permitted of one-way traffic only, many of the larger ones allowed of passage in both directions. In these cases it was interesting to note that the English rule of "keep to the left" was rigidly adhered to.

After a walk that occupied about fifteen minutes, we came to a very large chamber in the middle of which we were astonished to see our flier. How the Graks had succeeded in carrying the large unwieldy mass thither and why they should have had an apartment of a size sufficient and with a door large enough to receive it, we could not at first comprehend.

Suddenly Plant gave a laugh. "The explanation is that they have not moved it at all. Don't you see? It is at exactly the same angle as we left it and there is the sketch of Jupiter I scratched on the ground. They have simply built 'The Comet' in."

We received a message from the Crarns that this conclusion was correct, also an explanation of how it was accomplished, but this I shall reserve for a part of my narrative that deals further with these remarkable creatures' method of building.

Opening the door of our vessel, we entered followed by the Crarns, Kleek and our attendant remaining outside.

By a strange medley of words, thoughts, signs, demonstrations and sketches, Plant proceeded to explain the mechanism of the flier, the manner of propulsion and as much as he could convey of the nature of the fuel. Of this commodity a minute quantity remained in one of the containers. This, on their request, Plant scraped up, placed in a small box and handed to the Crarns.

All the explanations of the complicated machinery for flight, heat regulation and air renewal were for the most part listened to in silence (we mentally regarded thought messages as speech and I shall so refer to them in future) but from time to time a shrewd query was put which indicated that everything was being intelligently followed.

Special enquiries were made concerning the action of the fire-extinguisher and on our departure a labourer was instructed to bring away our second one. Apparently the Crarns were impressed with its possibilities in their perpetual war with the Krugs.

For a people who had advanced so far in scientific culture, there were many strange gaps in the Ganymedans' progress, the greatest of all being in their absolute lack of all warlike appliances, if we except the enlarged jaws of the warriors and the specially developed head of the syringe-soldiers, which were merely developments of natural organs possessed by their ancestors of millions of years ago, and could not be regarded as inventions.

For hundreds of thousands of years the Graks had lived strictly on the defensive in well-nigh impregnable citadels, all their skill being directed towards perfect sentry work, quick building, food manufacture and conservation and other conditions of a state of continual siege; all the military phases of their culture being in the hands of the warriors. These, with their heavily armoured heads permitting no growth of brain, showed all that rigid adherence to antique traditions that characterises the soldier caste on our own globe.

How many hundreds of thousands of gallant men, I wonder, would be

alive to-day had our brass-hats been less impervious to the impingement of progressive ideas.

In this curiosity of the Ganymedan intellectuals therefore, there might well be an interesting repetition of that revulsion of civilian thought that marked a definite epoch in the Great War on our own globe and put an end to the catastrophic domination of the "cannon fodder" school.

It was rather curious to reflect that on this remote world, situated at a distance that varied from four to six hundred million of miles from Europe a somewhat similar crisis might now after several million years of constant warfare arise. How persistent and deadly this warfare had been can be adequately explained only as a part of the past history of this ancient people.

CHAPTER V

THE BIRTH OF A NATION

I NOW come to that part of my note-book wherein I have recorded the details of the history, habits and social organisation of this strange race, that in certain respects far eclipsed the highest attainments of human invention and science, and in others had advanced little above the level of the stone age. A striking example of this latter phase was the fact that although, as we found later numerous metallic ores and salts are present on Ganymede, the possibility of obtaining metals from these compounds was unknown to its inhabitants, who were quite unacquainted with the nature and uses of fire.

Likewise we never discovered anything to indicate that they had any knowledge of electricity as a force, nor had they ever attempted to harness the force of the winds, which are

moderate and continuous, to their mechanical needs.

They are also quite unacquainted with anything remotely appertaining to such arts as sculpture, music or literature, the very faculty of writing the most rudimentary records being beyond them.

On the other hand the design, stress-resisting properties and perfect ventilation of their vast cities show them to be accomplished architects; also such achievements as the construction of our head-gears and visors indicated scientific knowledge of the highest degree, whilst as chemists they had for hundreds of thousands of years been familiar with principles after which our terrestrial scientists are still groping.

During the months that followed, Plant and I made extensive explorations of the Grak kingdom, or rather commonwealth, for there is no centralised government, and although we only traversed the merest fraction of it, we saw enough to get a pretty fair idea of the domestic and social economy of this wonderful people.

One point we realised, with a thrill of amazement, was that the towering range of mountains at the foot of which our flier had alighted, was not a natural formation, but was entirely the work of the Graks' hands or to be more definitely accurate, of their stomachs.

Of an average height of 3,000 feet, we afterwards estimated that this range stretched for a distance of over a hundred miles with a width of thirty miles or so. When I add that the whole was absolutely honey-combed with passages and chambers whose intervening walls were nowhere more than two feet in thickness and that the ramifications of this prodigious city extended for as far

below the ground as they did above, the reader may begin to have some idea of the inconceivable numbers of the inhabitants of the several thousand self-contained communities or cities that went to make up the whole commonwealth.

Strictly speaking the word commonwealth did not accurately express the condition, as there was absolutely no coordination of policy or of interests between the various city republics. Were one attacked and successfully invaded by a marauding army of Krugs, the sole reaction of the abutting communities to the catastrophe was to build up and strengthen any open or weak places in the intervening walls and to leave their neighbours to their fate.

Also if a part of any citadel were captured and efforts to eject the foe proved unsuccessful, all passages leading from the invaded part would be walled off and the invaders left in possession of their conquest. Already, as we gradually elicited, considerable sections of the mountain chain were in the hands of the Krugs, and we were told that the mountains, that we could see across the plain, had in bygone ages been built and inhabited by Graks but were now completely overrun and inhabited by savage hordes of their terrible hereditary enemies.

AT an earlier period in their history, probably millions of years back; the Krugs, though they had never been accomplished builders like the Graks, had been in the habit of tunnelling out cities for themselves in the hard earth, but, as changing economic conditions gradually made them dependent on raids against their more civilised neighbours for food, they formed the habit of occupying the more solidly constructed homes

they captured, and in time lost the ability to make dwellings for themselves.

In numbers it was thought that they approximated somewhat to the Graks, which we estimated by very rough and ready calculations at about two thousand millions.

Any attempts to describe the domestic conditions of a community of such colossal proportions, without confusing and wearying the reader by the sheer top-heaviness of the theme, would be fraught with so much difficulty to an unpracticed writer, that I will ask leave to adopt the easier method of taking the story back to a remote epoch and to describe the inception and establishment of a Grak colony at that period.

This will of necessity mean taking another very short step back to the mother city from which the founders of the colony emanated and describing a condition there obtaining, of such a marvelous nature that I am well aware that a certain proportion of my sceptical readers will be disposed to dismiss my account as a mere traveller's tale. This scepticism I must risk, as I feel quite satisfied in my own mind that it is the duty of a narrator to set out his story fully and completely, without suffering himself to be intimidated by the possibility of ill-considered scepticism. My description departs in no essential point from what I have actually seen.

Inside the parent city which we are taking as our starting point, in addition to the usual teeming multitudes of labourers with their less numerous police and soldiers, there would be living in the deepest recesses, a female Grak, the most important individual in the whole community. Let not however those zealous feminists amongst us, who consider that woman

is man's inevitable superior and regard the matriarchate as the ideal and destined government of our earthly nations, rejoice prematurely at this apparent support of their doctrines.

This distinguished female is no sceptred queen proudly issuing orders to her docile subjects, no revered "She - who - must - be - obeyed" of an adoring community, but is instead that absolute nadir of the feminist ideal, a specialised breeding-machine, and the main occupation of the attendant Graks that cluster around her is to supply the food she cannot procure for herself, whilst others remove from the other end of the royal apartment the eggs that it is her sole function to produce.

THE caste that performs these domestic services is smaller than is the labourer class I have already described, has still smaller jaws and, as it never emerges to the outer light has larger eyes. In addition to duties connected with the food supply of the city, which I will describe in another chapter, they are responsible for the feeding of the egg-layer, the care of the eggs, the rearing of the young and, most wonderful of all, the decision as to the type of Grak into which any egg is destined to develop; the difference being brought about, as far as I could ascertain, by the manner of feeding the immature young.

As a general rule, in the city I am describing, this choice would lie merely between nurses, labourers, police and soldiers as we may for convenience classify them, the intellectual caste dating back to less remote antiquity, but periodically another class was reared to numbers amounting to millions.

At definite intervals which ap-

peared to correspond with the Jovian year, (4332.6 days) myriads of eggs were specially treated, with the result that they developed into creatures of a most striking character. Not only were they of definite male and female sex; the nurses, labourers, police and soldiers are all sexless; but to their shoulders was attached a large pair of beautiful iridescent wings having a span when extended of nearly eleven feet.

In multitudes they roamed the chambers and passages of their unlit home, waiting till the time should come for them to be released, to spread their splendid wings and sweep to and fro in the bright sunshine of the outer world.

How little did they guess, or guessing care, for the pitiful liberty of this hour of freedom, or of the cruel fate that but one in ten thousand was to escape. Like the wheeling moth that achieves a transient thrill at the cost of scorched wings and a miserable death, like the children of that most awful of all the Crusades, they were to rush eager and heedless to their fates.

Then came the day when the Law of the Community decreed that the hour for release had struck. From a thousand apertures opened specially for the purpose, burst forth the dazzling throngs, high into the air, wheeling, curving and gliding. Above them shone the same distant sun that gave light to our own globe, a few degrees away from him a segment of Jupiter gleamed like a silver sickle, below lay—death.

At that remote epoch, Grakan tradition records that the surface of Ganymede presented an appearance vastly different from what it now offers. Then luxuriant vegetation clothed its now barren plains. Lakes

and rivers sparkled in the sunlight, or reflected the vast orb of multicoloured Jupiter. Animals of a thousand varieties disported themselves on the plains, or in the water, or swooped and fluttered above them.*

OUT over this thronged and colorful world circled the shimmering young Graks, a myriad pairs meeting in an ephemeral union that saw no fruition, then, the unpracticed muscles wearying, they sank exhausted to the ground, to the jaws and beaks of the hungry multitudes assembled from afar to the promised banquet.

Closing one's eyes one can imagine something of the grim scene, though of necessity the shapes of the marauding hosts must remain nebulous. Here one of the twenty-two-footed wheeling horrors rolled amongst the helpless groups, the twin heads snatching mouthfuls of quivering flesh, there maybe a huge winged raider swooped to the feast, whilst those victims that had fallen in the lakes were sucked down into the maw of some monster that lurked in the depths unseen. On the fringes of this feasting host even at this early date would roam batches of Krugs, acquiring that partiality for the flesh of the Graks that was to be the ruling note of the age-old warfare between them.

*It is of course quite impossible for me to hazard a description of the appearance, or even the size of any of these animals, nor can it even be known what was the nature of the vegetable life of those early days. Grakan tradition simply records great varieties of vanished species. "Live things that grew from the ground" and "live things that move about" is the nearest rendering of the thought-forms we received. After the Great Killing, a gang of labourers laid bare in the hed of an ancient lake the remains of a gigantic animal that in life must have presented the appearance of an enormous disc with twenty two feet around its periphery, and projecting from each flank a long flexible neck carrying an armoured, three-jawed head. One of the heads was too firmly embedded in rock for me to remove it, but the other is now in the hands of the Zoological experts of the South Kensington Museum in London who hesitate to assign to it any definite position in the animal kingdom. R.S.

But this orgy of death was not without its purpose. Ruthless, blood-thirsty and completely indifferent to the lives of her children as she is, Dame Nature always has an end in view and, paradoxical as it may seem, the object of this grim holocaust was life. For here and there amidst the butchered legions a pair escaped, for long enough to seek or scrape a protecting hole in which, having cast off their wings, they sheltered. In this retreat the female laid her first eggs, which in due course hatched into nurses and labourers. These at once assumed their duties, the latter to forage for food and to build up over their mother the apartment that was to form the nucleus of the new city, the former to tend and feed the foundress of the colony and to rear and nurture the young. Gradually, by burrowing and by building, the city grew. Soldiers and police were added to the population in carefully regulated proportions. Gradually too grew the body of the progenitrix and her rate of production, until in the inky darkness of the enlarged central chamber she lay helpless, her greyish white abdomen measuring some fifty feet in length and forty in circumference, pumping forth eggs the size of that of a goose at the amazing rate of forty thousand every twenty-four hours.* Beside her, as a rule concealed beneath the curve of her swelling sides lurked her mate, living in a condition of panicky trepidation such as would satisfy the most militant of mundane feminists.

*In all cases, unless the contrary is definitely stated, terrestrial measurements of time are given. This applies equally to days, weeks and months, for we kept exact record of the passage of time and regulated our times for meals and sleep by those to which we had been accustomed. I have forbore to perplex the reader with any mention of the "weekly" risings and settings of the sun as what with our visored headgear and the light of Jupiter, we were independent of his rays. Those who are specially interested should place orders with their booksellers for a popular astronomy. R.S.

And so the cycle of Grakan life went on year after year until the colony in its turn was strong enough to send out its hordes of winged fliers.

CHAPTER VI

A DYING WORLD

TO preserve some degree of symmetry in my narrative, I will now give such records as Grakan tradition has preserved of the well-nigh incredible changes that have taken place since the epoch that saw the enaction of scenes such as I have endeavoured to describe: concluding a short chapter with an account of such of the domestic habits, food supply, scientific attainments and social economy of the present generation, as became known to us during our stay on Ganymede.

Geological records show that our earth has been the home of animals of extremely varied types and sizes and that, as one epoch succeeded another, first one type and then another became predominant. The amphibia of the Carboniferous age gave place to the giant reptiles that were lords of the earth during the Jurassic period. Then mammals, at first small and weak, gradually gained ascendancy during the Tertiary epoch, until in comparatively recent times one of them attained to a dominance unparalleled in any previous era.

Of these ascendant races, some failed maybe from sheer size or ultra-specialisation and some from the rapid multiplication of more competent foes, whilst many fell victims to an alteration of the physical or climatic condition of their habitats, leaving the world to species more adaptable, or more specialised in the direction of invulnerability.

Governing the size to which any animal might attain, appear to have been various mechanical factors and forces, of the latter the most important being the gravitational pull of the earth, in other words the gross weight of any creature. For instance, scientific calculations prove that the muscles and bones of the giant reptiles required to be thickened and strengthened in ever increasing ratio as the size and weight of their bodies increased, until a limit was reached where size meant unwieldiness and practical immobility. Some evaded this law for a time by dwelling in swamps and shallow seas, with the inevitable result that any marked change in physical and climatic conditions brought about their extinction.

An important group of families, the Crustacea, Anachnids and Insects, had adapted the device of developing an exo-skeleton, that is to say an outer calcareous or chitinous framework, instead of an internal bony, or endo-skeleton.

Though highly successful within certain limits of size, inflexible mechanical laws denied these types increase beyond a definite weight determined by the size and hence the gravitational pull of the earth. Had our earth been of the dimensions of Ganymede beetles might well have attained the size of cattle, house-flies the proportions of albatrosses and, from the perfection of their communal regime, such creatures as ants and termites might to-day occupy, and more successfully, the position now held by men as Lords of Creation.

But let us return to Ganymede and the factors that produced the almost unimaginable changes on that distant satellite. These of necessity must be largely surmised, Grakan tradition,

that inexplicable example of mass-memory survival, being concerned only with the history of their own race in its long battle against the forces of Nature and the Krug hordes.

At the early age to which I have in the last chapter asked the reader to accompany me, Ganymede must have been a well-vegetated world, possessing adequate surface water though no great seas, and supporting a large animal population, consisting doubtless of both carnivorous and herbivorous types. Throughout their earlier history the Graks had been strict vegetarians. The Krugs on the other hand were carnivores, killers by instinct, though ready enough to devour the dead when hungry, and with a special fondness for the bodies and also the food stores of the Graks.

Though a less ancient and cultured race than the Graks, they greatly resembled them in the internal economy of their cities and in their great prolificness. These two tribes aided by favourable climatic conditions and an unlimited food supply, became in time from sheer force of numbers the dominant races of the globe, and deadly warfare between them was unceasing.

As the more virile and active race and being essentially flesh-eaters, it was inevitable that from the time of their earliest clashes in the dimly remote past hundreds of millions of years ago, the Krugs should have been the attackers, with the result that the Graks more civilised, vegetarian and already skilled in building, should have specialised as defenders. As the ages passed, in proportion as the attackers of the Krugs became more systematic and coordinated, so did the defensive system of the Graks become more complete and unassailable.

A specially hardened cement, produced by the labourers, who chewed up organic matter and passed it through their intestines, rendered the outsides of their cities impregnable to all except the largest foes. Underground tunnels lined with this cement led enormous distances to water and to the sources of food supply. Methods were evolved of storing and growing food in their vast subterranean cellars. This home-grown diet consisted mainly of a special kind of fungus which they grew on prepared beds of fermenting vegetable matter.

A warrior caste was developed with enormous heads adapted to fill any perforation of the outer walls whilst the powerful jaws kept attackers at bay, the syringe soldiers being evolved for an analagous purpose in a separate race of Graks. Under stress of later circumstances the two races coalesced.

THE weak point in this elaborate defensive system was the question of supplying water to the swarming hosts of the communities which themselves tended to become more closely grouped together. Sometimes it was possible to roof in a section of a stream or a small lake, but their implacable foes the Krugs, who roamed abroad at will except for certain enemies amongst the larger animals, and who had not yet lost their engineering abilities, usually countered such moves by diverting the course of the parent streams.

Then the Graks commenced the construction of large cisterns beneath their cities into which they led water from the surface. This policy was successful and rendered possible a large increase in the population of the cities and of the number of the cities themselves. Gradually the honeycombed

hills assumed the dimensions of ranges of mountains containing uncountable millions of inmates.

As the Graks multiplied so did the Krugs, who preyed on them unceasingly as well as on such animals as they were able to overcome.

Then occurred a catastrophe that definitely altered the whole history of the planet, though the cause of it was not known. The great river, that had fed the group of lakes in the regions inhabited by the Graks, ceased to flow and gradually one by one the lesser lakes dried up, with the result that large areas became converted into lifeless desert.

At last only one large though much reduced lake remained, a few miles from Grakok their main stronghold and round it gathered all the remaining life on the drying planet.

The teeming hordes inhabiting the enormous artificial mountain ranges began to feel the pinch of want and millions perished. A rigid policy of food-conservation, whereby all their own dead and even all excrementitious matter was devoured, was instituted. The populations of all cities and the proportionate numbers of the different castes were regulated by—that mysterious Law or "joint mind of the community" that governed them; any redundant young being immobilised by having their feet bitten off, until such time as they were wanted for food.

The "mushroom beds" were extended enormously and to keep them humid the already gigantic reservoirs were enlarged.

The end of this epoch came when the last of the surface water disappeared for ever, drained away into these vast subterranean cisterns. One does not like to picture the scenes upon which unheeding Jupiter must have

looked down. The withered vegetation, the starving, thirst-mad animals scraping fruitlessly in the drying mud of the lake-beds, the short period of plenty for the carnivores and then nothing but stark death and desolation; save in the impregnable strongholds of the folk that had blindly helped to ruin a world and amongst the drought-resisting hordes of the full-fed Krugs.

The commencement of the period of scarcity saw the inception of the intellectual class, who were a special development of the domestic-nurse caste and who, from being specialists in food conservation became, as the ages passed, physicists and chemists of superlative skill and with the distinctive appearance I have described. Amongst other things, they had banished for ever the bogey of starvation by discovering how to make nitrogenous food-stuffs from the nitrogen of the atmosphere and the waste products of nutrition. This, in addition to the fungus beds, aggregating thousands of square miles, assured an unceasing food supply.

The ingenuity with which this ancient race made use of every natural factor was shown by the important secondary utility of these subterranean masses of fermenting vegetation. The moist warm air rising therefrom was skilfully directed through the ascending maze of passages, which it thus ventilated and kept at the correct degree of temperature and humidity, until it reached the topmost chambers, where it was allowed to escape as desired through cunningly designed ventilating shafts.

AS an example of the system of rigid and scientific economy that had become part of the Law, all traces of moisture were extracted

from this vitiated air before it was permitted to pass out, thus helping to conserve the water supply. The carbon dioxide was also secured and utilised in scientific food manufacture. Further, Plant assured me that this surprising people had discovered the secret of synthesizing water from atmospheric oxygen and the hydrogen of waste material, though as yet this was not done on an extensive scale.

Any risk that the formidable warrior caste might become too powerful and tyrannical had been provided for at their first inception by the fact, that big and strong as they are, and formidable as are their jaws, the very size of these is their weakness, as it renders them unable to feed themselves. They are thus absolutely dependent on the smaller nurses or labourers for nourishment and, if the Law so dictates, they may be starved to death.

Strikingly indicative of the extreme conservatism induced by an age-long practice of a custom, the periodical rearing and release of the winged hordes was still carried on, despite the fact that for untold years all possibility of any new colony being thus established had vanished, owing to the bare dryness of the outer world and the hosts of ravenous Krugs that, fully aware of the approaching flights, assembled in unnumbered legions to feast on the fallen cohorts.

Plant hazarded the suggestion that practice of this ceremony from immemorial times had encrusted it into something of the nature of a religious rite, with the result that, like most analogous performances, it persisted long after its tragic futility should have been obvious. He held that terrestrial parallels were not unknown. Be that as it may, we learnt with interest that the next performance of

this sacrificial ritual was to take place about six months after our arrival on Ganymede.

It was in this stage of the Graks' development that we found them. Range upon range of teeming cities, each with a fifty-foot greyish-white female in its centre, ceaselessly pumping out eggs day after day and year after year, until the Law decreed that her period of usefulness was ended, when a successor was installed and she herself was used in the communal food supply. Each city had its proportionate hosts of nurses, labourers, police, warriors and intellectuals, each had its subterranean reservoir, its fungus beds, its food stores, its laboratories and its endless miles of passages; whilst outside, tirelessly patrolling the saffron plains from their bases in the captured Grakan strongholds, roamed the savage vermillion-hued Krugs seeking endlessly for a breach in the adamantine city walls.

CHAPTER VII

HOMO SAPIENS *vs* KRUG FEROX

THE unremitting nature of this state of siege was strikingly manifested to us a few weeks after our arrival amongst the Graks. We had been examining one of what Plant called the "Corpse Conversion Factories." These are large chambers situated in the uppermost parts of the city and to them are taken all the dead of the community and such Krugs as might fall into their hands. In these chambers, under the combined influence of the warm rising air and such heat as the sun and the parent planet bestow, the bodies are dried, powdered by the jaws of the domestics, who then by the aid of a special syrupy liquid they secrete

make the powder into cakes which are transferred to the central food store.

Suddenly from a few hundred yards away there came the echoing sound of loud hammering, made, we learned, by a soldier beating his enormous head against the hardened walls, the recognised alarm signal. Instantly all was excitement and apparent confusion. As we hurried to the spot, Kleek leading the way, we were met by lines of labourers and domestics scurrying from the source of the alarm and also came upon a line of warriors going the same direction as ourselves, all grating and grinding their joints in a staccato series of shrill squeaks and whistles, which were of the nature of a "general assembly" call. Somewhat in the rear marched in single file a detachment of labourers carrying fragments of building material.

In a few minutes we arrived at the scene of the disturbance, one of the upper laboratories. Here we found that by some means a body of the restlessly exploring Krugs had found an imperfectly secured ventilation shaft into which they were now pouring by scores, one half of the chamber being already completely occupied by them. Facing this vermillion host was a throng of warrior Graks slashing desperately with sickle-jaws at the joints of their foes or, across the shoulders of their comrades, spraying the enemy ranks with the coagulating liquid.

Desperately as fought the defenders, the fight was obviously a losing one and already our following of labourers, under the direction of a few of the police, was commencing to wall up the three passages that gave access to the chamber. This was accomplished in a simple and expeditious

manner. A labourer would advance to the doorway, direct the button-like termination of his abdomen to the selected place and emit a jet of the liquid cement that it is one of their functions to prepare in their intestines from swallowed organic matter. This, on exposure to air, sets rapidly, giving the worker just sufficient time to press into it the stone or hardened lump of cement he is carrying. His place was then taken by another and again another; the whole operation being carried out with such routine precision, that but a few minutes sufficed to build up and close a passage of six foot diameter.

As we watched two of the doorways were completely blocked, and operations on the third, which had been kept open to admit of a continued stream of reinforcements, were commenced.

"Come on, Plant," I cried, realising that with that impersonal ruthlessness that characterises all Grakan actions, the chamber and its struggling garrison were to be abandoned to their fates. "Hurry, or we will be shut out."

Already scores of the Grak warriors lay lifeless on the floor mingled with an even greater number of their desperate foes, and the line of the defenders in places was becoming thinned to a single rank. Suddenly, as we sped to the rapidly closing doorway, half a dozen Krugs made an impetuous charge and, striking down a couple of their opponents, hastened to intercept us.

WHAT chance had Kleek against the combined attack of six opponents? What chance had we with empty hands and defenceless bodies against these terrible creatures with their mailed bodies and poisoned stiltoes?

All seemed lost when, with the desperation of panic, I stooped and seized by the legs the body of a fallen Grak, with the futile idea of using him as a shield against the deadly stings. The ease with which I lifted the bulky form with its overgrown head reminded me of the sixfold strength given to us by our earthly muscles.

Whirling the corpse aloft I brought its armoured head down upon that of my nearest foe. The result was surprising and satisfying. He just squelched as might an egg beneath the blow of a hammer.

Plant was quick to follow my example and four more blows from us and a vigorous slash from Kleek cleared our way. A few strides took us to the exit, where, unceremoniously pushing aside a busy mason, Plant managed to squeeze through the narrowing aperture. By this time several other Krugs had burst through the defending line and were rushing towards us. The devoted Kleek met them with ready jaws, giving me the few moments respite that enabled me to wriggle through into the crowded passage, just as the main body of the attackers swept over the last of the defenders and made toward us.

Kleek true to Grak tradition, stood with his back to the doorway fighting to the end, until at last under sheer weight of numbers he went down to rise no more. On the day of our advent to Ganymede we had saved his life. He had paid the debt full measure.

The final outcome was still uncertain, for were the Krugs to gain access to the aperture they might yet manage to enlarge it sufficiently to admit of an irresistible rush, that might well result in the capture of the whole city and the butchery of its teeming throngs of defenceless inhabitants.

But here we got another example of the utter self-abnegation of the individual Grak to the welfare of the community.

INSTANTLY the warrior nearest thereto thrust his huge head through the opening and, as we could plainly hear, met the Krug assault with vigorously slashing jaws. Methodically the masons proceeded with their work, spraying their cement impartially on the edges of the gap and on to the neck of this Ganymedan Horatius, and plugging the intervening spaces with their materials. In less than a minute the wall was solidly built up with the defender's head as an integral part of it. The workmen then calmly proceeded with their scissor-jaws to cut the body away from the neck and make all smooth and neat. This accomplished, they returned to their routine occupations, the assembled soldiers retired to their barracks leaving a single sentry on guard, two domestics carried off the decapitated corpse to the drying rooms, and what was probably a daily Ganymedan episode was at an end.

"Phew!" I gasped mopping my brow. "In the old days we used to speak about the ruthless efficiency of the German military system, but the Graks could give them points any day of the week."

"I expect the Krugs will retain possession of the section they have captured. The brutes!" commented Plant. "On general principles I am not at all keen on killing anything, but I must confess that swotting these crimson horrors gave me a distinct feeling of satisfaction."

"Curiously enough I felt just the same," I laughed. "Some sudden atavistic impulse no doubt."

"More than likely," my friend re-

joined "except that I still have it. Let us make careful note of the position of this place, as I have a mind to test a little experiment shortly, that may give brother Krug the surprise of his life."

At the time that this incident occurred, which gave us such a graphic demonstration of Krug siege methods at close quarters, we had acquired a sufficient degree of familiarity with the city into which we had been introduced to be able to find our way about the larger passages and could as a rule return to the room we had first occupied and which had been allotted to our special use.

I might here mention that our apartment was now plainly but adequately furnished with two couches covered with rugs from the Comet, some benches and a central table, all built up under our directions from the adamantine cement secretion and polished to the smoothness of plate glass.

In a corner near the window was what we regarded as the greatest of our minor engineering triumphs. This was nothing less than a shower-bath. The extreme discomfort attendant on the absence of this amenity had stimulated our inventive zeal. In a chamber above, detachments of labourers had made a large cistern, which it was the business of a special gang of domestics to keep filled. A hole in the bottom of this allowed the water to pour through into the corner of our room, where a large hip-bath of beautifully smooth cement had been built. The shower-releasing mechanism, a tightly fitting plug, was crude but effective. Another plug in the bath allowed the used water to escape into another cistern, whence the economical domestics carried it down to the fungus beds.

We were now able to take the daily

shower so essential to the average Englishman's comfort and sense of well-being. The Crarns used to watch our ablutions and resumption of our clothes—which luckily, as far as the outer garments were concerned, were of leather—with grave attention but, as naturally we temporarily discarded our head-gear, we could not tell what their mental reactions were. The other Graks, sentry, labourers and domestics, showed not the slightest interest.

We also managed to wash our underclothing with moderate efficiency until such time as this completely wore out, leaving us for a while with only our stout leather suits to cover us. Needless to say we had brought nothing of the nature of shaving tackle in The Comet. Luckily however Plant had a pair of nail scissors with which we managed to keep our hair and beards clipped down to a reasonable length; in the absence of a mirror performing these tonsorial operations on one another.

FOR the most part the window of our room stood open, though day and night a vigilant sentry kept unceasing watch for the approach of an enemy. As a rule our little domestic remained in the room cleaning up though when we visited a strange part of the city we took him with us as a guide, for he was more conversant with the subterranean byways and food-chambers than had been our late bodyguard, Kleek. Also, more often than not, two or three of the Crarns would accompany us and explain the details of the various scenes and processes we encountered.

Under this guidance we visited the great water reservoir, the fungus beds, the grim chamber where the fifty foot long egg-layer fulfilled her

terrible destiny, the nurseries, the barracks, the mortuaries and the laboratories. Often also we would travel by one of the underground tunnels far out beneath the open plain and then ascending to one of the strongholds on the surface—"pillboxes," Plant called them—we would make cautious excursions into the open for roving Krugs.

After our adventure in the laboratory, we got a labourer under the guidance of a Crarn to make us a couple of clubs out of large stones with very hard cement handles. These which on the earth would have weighed nigh on fifty pounds, we could wield with ease and always carried with us, deriving a distinct comfort from the fact that we were not utterly defenceless. Also we were provided with beautifully constructed cement armour of our own design, comprising breast and back plates, thigh pieces and greaves. We preferred to have our arms unencumbered.

During our excursions, Plant examined the soils and rocks carefully for though the plain was for the most part covered by the saffron earth, it was freely interspersed with patches of rock and stones of considerable variety. Of many of these we brought home samples, which Plant would take to the laboratory, with which the Crarns had early provided him.

Often as a result of his tests, a detachment of labourers would be sent to bring in large quantities of some particular substance.

It was on one of these outings that it fell to my lot to save Plant's life, as he always contends. I protest however, that it was entirely a matter of luck which of us was in a position to help the other and the saving might

just as easily have been the other way round. It happened thus.

WE had come across some surface deposits of cinnabar in which Plant was profoundly interested.

"As soon as I can rig up some sort of a furnace," he said as he filled his pockets, "it will be a simple matter to extract the mercury by volatilisation, also the sulphur dioxide will be of use. However, it is mainly the mercury I want at present for as you know in the form of the fulminate it plays an important part in the manufacture of plantite, apart from its other uses."

"What are they?" I asked.

"Well we might be able to try the effect of a little corrosive sublimate on our scarlet foes either in the form of a spray or internally if they could be induced to take it," he replied. Then, with a laugh, "Also, if you find your somewhat sedentary life inducing a touch of 'liver,' I could probably contrive to supply a dose of calomel."

"Sedentary life!" I snorted. "If you call tramping along about fifty miles of passages, mainly uphill, every day, sedentary, I have no desire to be active. As a matter of fact, what with the exercise, this fine atmosphere, the unfattening diet of mushroom cakes, our reduced weight and the mental stimulus of interest and excitement, I never felt fitter in my life. I feel as if I could run fifty miles, jump over a mountain, or fight a score of Krugs. Show me your Krugs," I shouted, waving my cement club.

Seldom are human commands answered more speedily or more dramatically than was my vaunting challenge, for at that moment, thinking maybe that my cry and gesture betokened their discovery, as if by magic

appeared, not a score fortunately, but fourteen of the scarlet brutes. They had evidently seen us coming and with savage cunning had crouched motionless on the outcrops of vermilion cinnabar which afforded them a perfect camouflage. Luckily for us my chance gesture had roused them to action and visibility before we were completely surrounded, though three had managed to cut across our line of retreat to the "pillbox."

"Now you've done it, Ronald, with your infernal conjuring tricks," snapped Plant. "Come on. Run like blazes."

I needed no bidding for already I was in full retreat. A Krug, that tried to intercept me, collapsed like a crushed beetle beneath my huge club. Out of the tail of my eye I saw Plant lay out another and then as he swerved to dodge the third, to my horror, I saw his foot turn on a loose stone and a moment later he was lying flat on his face, helpless in the path of the charging monster.

Like a flash it was upon him with slashing jaws and unsheathed sting and I was still a full twenty yards away. With the panic of desperation, I hurled my club with all my force at the scarlet fiend, as it poised its sting to strike.

How I blessed the hours I had spent on that Natal farm, learning under the guidance of old Nsaka, the Zulu herd, to throw a knob-kerrie at the plump little paaus (bustards) ere they took to wings. The Krug was very much larger than a paaus and was standing still, moreover the deadly need of the moment lent power to my aim. He simply crumpled up as the heavy club struck him amidships and, a moment later, I was at my comrade's side.

"Up with you," I cried picking up

both the clubs. "I'll keep the others back."

Plant made an effort to rise then sank back with a curse. "I can't walk," he gasped. "I think my ankle is broken. Don't mind me, Ronald. Save yourself."

"That be damned," I cried. "It's both or none. In any case we are surrounded now." for by this time the other eleven foes had overtaken and ringed round us, as is their habit before rushing in to the final charge.

From the outpost a strong detachment of Grakan warriors had emerged on the first alarm, but were still too far off to succour us in time. Apart from my companion's helpless condition a line of active foes now barred the way.

"Get on to your knees, Plant and when I lift you hang limp. There is just a sporting chance," I cried remembering my recent boast.

Taking careful aim I hurled first one club then the other at the nearest of the intercepting Krugs, then, flinging Plant across my shoulders, I ran to meet the others. In a few strides I was upon them and as they braced themselves to meet the expected impact I crouched, then tautened my earth-trained muscles in a vigorous leap.

So vigorous was it that I nearly overdid it, for even with the added burden of my friend's body across my shoulder, I had to lift but a third of my accustomed weight. Fifteen feet into the air I soared high over the row of snapping jaws that rose to grasp me. A full forty feet I landed past them and was safely behind the line of rescuers ere they had fully realised what had happened.

Under the protection of our body-guard we retired at a less strenuous

pace to the welcome shelter of the pill-box. The nine Krugs pressed hard on the heels of the slowly retreating line of our defenders—if one can use the term heels of soldiers who were retiring backwards and who had no heels anyhow—and, as we reached the outpost doorway, they made a desperate but futile charge. This ended with two of them staggering back with several limbs severed, whilst three more, that had caught the discharge of as many syringe-soldiers, writhed helpless on the ground, beside the decapitated corpse of yet a sixth.

AS the uninjured three stood irresolute, a dozen Graks ran quickly forward and literally cut them to pieces, ending by similar dispatching of the two wounded. It had been a desperate encounter, but the honours were heavily on our side for we had scored fourteen dead Krugs to one badly sprained ankle, for it proved not to be broken after all. Also I had in some small measure made good my jesting challenge.

True I had not run fifty miles, nor had I jumped over a mountain, nor had I killed twenty Krugs. I had however run about three hundred yards and leaped over a line of enemies with a twelve stone (168 pounds) man on my shoulders, after slaying four of our opponents single-handed, which is a higher proportion than is fulfilled of most thoughtless boasts.

As soon as our bodyguard had retrieved our clubs, I carried Plant to our room and laid him on his couch. Having bathed and bandaged the swollen ankle as well as I could, I sent for some food which I felt we both needed. A large vessel of water stood on the table and we each gulped down a pint or so. There is nothing like be-

ing in a blue funk to make one thirsty. As I took back the pitcher from Plant, he shook my hand.

"Thanks, Ronald," he said simply. "You saved my life. I won't forget it."

"Rats, old man," I muttered. "It was just luck that it was not you that had to do the same for me." None the less I returned his grip heartily. I had not forgotten the heart-chilling moment, when he lay helpless at the mercy of that crimson horror. We realised how narrow had been his escape when we saw the deep scar left by the savage jaws across his back-plate. After this we never ventured out into the open without a bodyguard of at least twenty Graks.

Consideration of the great value of armour in warfare with the Krugs led me to speculate as to the reason for the dorsal surface of the abdomens of the otherwise well-armoured soldiers being undefended. I put this question to the Crarns and learnt that it was part of the Law that this should be so. The underlying idea appeared to be that the consciousness of such a vulnerable surface would have the effect of eliminating all possible inclinations towards retreat except in an orderly manner and facing the foe.

It was a week before Plant could hobble around, but he did not discontinue his work; for a special seat was fixed up for him in his laboratory. Thither each day he was carried by a couple of labourers on a cement stretcher.

As time went on, various vessels and appliances were constructed to his requirements from this wonderful intestinal cement of the labourers and the range of my friend's experiments was extended.

END OF PART I

Denitro

By STANTON A. COBLENTZ

In view of the notice which the League of Nations has been receiving in the daily journals, this story, giving a view of the future weapons of war, will make very timely reading.

CHAPTER I

WHEN Premier Carol Lupescu of the Checko-Balkan Republic undertook his war upon Trans-Danubia in the late summer of 1984, the world was alarmed and horrified at what seemed an unprovoked and unnecessary display of military prowess. The Checko-Balkan Republic, as is well known, had long constituted the greatest and most powerful empire of Eastern Europe, and not infrequently had been heard to brandish the sword with an ominous rattling; yet it had ever dwelt at peace with its mighty neighbor, Trans-Danubia, and the latter had been sedulously careful to avoid any excuse for conflict. Nor was there any apparent cause for hostilities when the great crisis of '84 arose, and Premier Lupescu, seizing on the pretext of a border scuffle between half a dozen drunken troopers, whipped up the patriotic frenzy of his followers, and let neither diplomatic suasion nor the clear demands of justice and common sense deter him from his purpose.

Many were the excited rumors that vibrated through the air during those stormy days when Checko-Balkan troops were mobilizing by the hundreds of thousands, and when delegates from all the great Powers gathered at unavailing conferences in the effort to stay the hand of the martial-

ly inclined Lupescu. It was said that Lupescu was scheming to steal all the Trans-Danubian territory under the pretense of civilizing it; it was reported that he entertained grandiose ideas of making himself a twentieth century Caesar; it was even whispered that he was a madman who was determined to overthrow the peace of Europe and of the world for the mere whim of personal glory. And tremendous was the anxiety that was felt, for the Continent, shaken by repeated wars, would scarcely be able to endure the shock of another encounter.

Yet as well counsel wisdom to a mad dog as to the bloodlusting Lupescu. "The Trans-Danubians are an unspeakably barbarous people!" he persisted in proclaiming. "They have trampled on our flag and spat on our honor, and we intend to retaliate, for the honor of the world and of our great nation!"

And, by way of proof that these words were no mere idle boast, he continued to drill his troops, to summon younger conscripts to the colors, to make fire-spitting speeches, and to mass both men and munitions near the border to Trans-Danubia.

Little did any of Lupescu's millions of critics, and his hundreds of millions of spectators, suspect the actual driving motive of his campaign. Little did they realize that he and his military



I was unable to rise! Yes, literally unable to rise!

advisers were acting under the spell of modern scientific accomplishment; little did they understand that he had been fascinated by the possibilities of a new weapon of warfare, which offered such spectacular opportunities and promised so swift and so certain a victory that he could not resist its allurements. Lupescu was, in fact, like a small boy with a new toy to test; and it was merely incidental that natives of Trans-Danubian should be the targets, and that the peace of Europe should be imperiled.

Hence the world was to see some astonishing, some wildly unpredictable developments, before the good year of 1984 had drawn to a close.

It was typical of Lupescu, however, that despite his unbounded eagerness, he moved with a certain degree of circumspection and caution. Although he was literally rushing into war, he did everything possible to conceal his real incentive; and amid all the blaring of bugles, the flaunting of banners, the rumbling of drums, he let out no intimation of the dire secret that he hugged to his breast, but gave every evidence of having placed the hope of victory in the old, time-tried weapons of airplanes, machine-guns, poison gas, and the like. As an expert showman, skilled in the gentle art of blowing dust into the eyes of his audience, Lupescu was by no means unworthy of recognition.

Even after war had been officially declared, he waited a while before playing his trump card. He let a little preliminary gun-fire blaze across the front, content that a few thousand lives, more or less, should be snuffed out before his full intention became manifest. Hence the first few weeks of the war dragged by without notable results. The second month found both armies clutched in what appeared to

be a deadlock at their respective borders: except for some routine slaying, and the destruction of an occasional church, hospital, factory, and art museum, scarcely anything of mention had occurred.

Then, when it began to be whispered that this was to be a "war without victory," Premier Lupescu prepared to act. On the fourth of October, according to scrupulously drawn secret plans, the decisive assault was launched. And on that never-to-be-forgotten day, exactly six weeks after the outbreak of hostilities, the world was startled by news of so extraordinary, so bewildering a nature that for a long while men went about muttering incredulous queries.

Nothing as yet, in fact, was known positively of what had occurred. It was merely current gossip that the Checko-Balkans had won a striking, a phenomenal victory; that they had struck with devastating suddenness, employing some novel method of attack; and that their foes had melted before them like snow before a fire-brand. But many days were to pass before more definite tidings were to seep through the thick veils of censorship.

CHAPTER II

LET me, at this point, intrude with some personal reminiscences. As a lieutenant in the forces of Trans-Danubia, I was an unwilling eye-witness to all that occurred; and while I did not emerge unscathed from that harrowing episode, I am fortunately still sufficiently in possession of my faculties to be able to report exactly what occurred.

I remember that, on the fourth of October, we had been idling along in the usual routine of trench warfare,

wherein nothing more startling occurred than an occasional charge of tanks, a duel of airplanes, or a poison gas attack. All that morning, things seemed rather dull, except for a handful of bombs that exploded snarlingly in our sector, taking at most a stray life or two, there was little to show that the war had not entered the stage of apathy and boredom. I had actually detected some of my men in most unmilitary yawns, and was chiding them on their lack of a martial demeanor, when, toward noon, a signal flashed along the line with a suddenness that electrified us all: "Action! Be ready for action!"

Springing into position, and glancing through a periscope over the rim of the trench, I saw that it was indeed time for action. The Checko-Balkans were attacking! And attacking with what appeared to be a new weapon! Thousands of them had sprung out of their trenches, and were approaching with riflilike instruments that vomited a thick yellow smoke! Owing to the density of the fumes, their movements were largely obscured, enabling them to avert the worst of our gun-fire; hence, despite all that we could do, our trenches began to be bombarded with steel-gray little capsules no larger than marbles—the most diabolical weapons ever invented by man!

Contrary to our expectations, the missiles did not explode immediately on striking. They would lie inoffensively on the ground, as though to invite inspection, and then of a sudden, as if operating on a time-fuse, would go off with the most deafening repercussions. I can only recite my own experience, though I know that it was duplicated in thousands of cases: the shock of one of these explosions was such that I was literally knocked off my feet, and lay on the earth in a

dazed condition, only gradually returning to an awareness of myself and of the world about me. There was a dull, stunned sensation in my ears; I was astonished by what appeared to be the sudden cessation of all sound; and only gradually did the power of hearing return to me, and the booming and thundering of the battlefield once more grow audible.

Concluding that, after all, I was not seriously hurt, I tried to pick myself up, from where I lay ignominiously sprawled on the ground. And now all at once I was overwhelmed by the strangest, the most bewildering, the most terrorizing feeling of my life. I was unable to rise! Yes, literally unable to rise! I did, it is true, manage to totter halfway to a standing position; then suddenly the world seemed to sway all about me; I seemed unable to guide the movements of my own limbs, was uncertain of their proper relation to one another; I staggered, reeled, and collapsed like an infant just learning to walk!

Finding myself back on the ground, I strove once more to rise—but always with the same disconcerting results! This time I could barely struggle to my knees; then, falling, I painfully bruised my shins against a rock. And, on the third attempt, I was embarrassed to find myself pitching head-foremost across the prostrate form of a comrade. A sailor in a storm at sea, or a drinker stumbling in the last stages of intoxication, would have been as steady on his feet as I!

It was after the third vain attempt that an even more baffling bit of knowledge thrust itself into my consciousness. I was not alone in my inability to rise! All my companions were in the same predicament! As far along the trench as I could see, my

brothers-in-arms—privates and officers alike—were in the throes of the weirdest contortions it had ever been my lot to witness. Had it not been so tragic—and had I not been a sharer in their affliction—it would have seemed almost comical to watch the antics of these poor sufferers. Time after time they would seek to rise, and time after time would flutter and fall, while seeming to grasp at some invisible support; time after time, until their last shreds of strength and patience were exhausted, they would struggle to regain their balance, would grope with uncoordinated, aimless movements, and on each occasion would seem to grow more incapable of controlling their muscles, and would fall more precipitately to earth.

Finally, after exhausting every effort, some of them lay in lifeless heaps; others still wriggled and squirmed just a little; and many more, like men whose legs have been shot from beneath them, began painfully crawling—crawling on their bellies across the battlefield. In the whole sector within my view—a sector containing several thousand of the best trained Trans-Danubian fighters—the only man who remained on his feet was one solitary private who, by some miraculous chance, had not happened to be in the vicinity of any of the exploding steel-gray capsules.

What had happened? We asked ourselves in growing apprehension, as time went by, and despite all our efforts, we seemed more helplessly unable than ever to rise. Had the entire army lost its sense of equilibrium?

Such, in fact, proved to be the case. With the passage of hours, of days, of weeks, our disability was not mastered. Those of us who did not succumb—and there were many who

perished of the shock—had to be carried from the field on stretchers, in the condition of hopeless paralytics. Although there was nothing wrong with us so far as any physical examination could reveal, some minute center of adjustment had been destroyed forever; and, unable to regain our sense of balance or to maintain an upright carriage, we were henceforth to be the occupants of hospital beds—cripples who could move from place to place only by the infant's slow and helpless process of crawling.

CHAPTER III

WHAT we did not know at the time—but what could not, in the long run, be concealed from us—was the fact that the calamity had been nation-wide. Not only one sector of the Trans-Danubian front, but the entire battle-line, had been attacked by the strange explosive steel-gray capsules; not only thousands but hundreds of thousands of our soldiers had been incapacitated, until they overflowed all the hospitals and asylums in the land, and were taxing every agency of public and private relief. For the first time in history a whole army had lost—permanently lost—its sense of equilibrium!

Only by degrees did the facts regarding the pernicious invention become public. After a time, it came to be recognized as the discovery of Joseph Rosencrantz, an obscure physician in the employ of the Checko-Balkan Republic. By an irony, Rosencrantz had not originated it with the intent to make any contribution to the art of warfare; in fact, he did not deliberately originate it at all, but merely stumbled upon it by virtue of one of those accidents that so frequently con-

trol the destinies of men and of nations. Though reviled to-day by millions as the earthly emissary of Satan himself, probably nothing would have surprised him more, during the first fifty years of his life, than to be told that his name was to go down to posterity beside those of the inventors of gunpowder and of poison gas. A civil physician, employed at Bucharest at one of the great government hospitals for the deaf and blind, he had been quietly conducting researches into the human ear and its anatomy, with the hope of aiding certain sufferers, hitherto believed hopelessly deaf. Pitiful paradox! that a man eager to help humanity was to prove one of its greatest malefactors!

Just how Rosencrantz made his discovery has never been thoroughly explained, owing to the iron censorship that has reigned and still reigns over all military matters. It is believed, however—and the explanation, with a view to all subsequent facts, appears reasonable enough—that he was exploring the channels of the middle and inner ear, which, as is well known, control not only the sense of hearing, but that equally important sense: the sense of equilibrium. Somehow it occurred to him—through what unhappy prompting will never be known—that just as victims of amnesia can sometimes be startled back to normal memory by a sudden shock, so a timely shock to the ear might restore the hearing of those otherwise stone-deaf.

Nevertheless, there is no reason to suppose that Rosencrantz *expected* his experiment to succeed; it was merely one of those wild guesses which scientists, in their assaults upon the unknown, are repeatedly trying out, and which bear fruit in perhaps one case out of a thousand. Unfortunately, this was the one in a thousand, though the

fruits were to be far from what the inventor had contemplated!

One of the few undisputed facts about the whole affair is that Rosencrantz somehow did devise the explosive known as Denitro—a phosphorus-ammonium compound, whose peculiarity was that it was almost harmless so far as its first effects were concerned, since it acted like a blank cartridge, occasioning a great deal of noise but little direct damage. However, Rosencrantz found to his amazement that there was something in the detonation, some peculiarity in the frequency of the sound waves, which struck the aural waves,—almost as a blast of light many times stronger than sunlight might affect the eyes—leaving the ears temporarily paralyzed, and destroying permanently that power of adjustment to the outer world, which is known as the sense of equilibrium.

Now there is reason for supposing that Rosencrantz did not originally ascribe much importance to his discovery. But somehow—through what channels has never been revealed—it came to the knowledge of some high government officials, and through them to the ears of Premier Lupescu, who instantly perceived its military possibilities. Always quick to act in an emergency, he acquitted himself with especial celerity on this occasion; he sent out an immediate summons to Dr. Rosencrantz; and when the bewildered physician, feeling that some mistake had been made, appeared at the offices of State, the stage was all set for one of the most notable interviews in history.

The details of that celebrated colloquy have never been made public; it appears probable that, even at this crucial moment, Rosencrantz did not fully understand what was afoot. Even

if, however, he was taken into the confidence of the Premier, it was undoubtedly patriotism, rather than any really vicious motive, that induced him to yield, and to transfer over to the War Department—in return for an insignificant stipend—the formula of his invention, along with the assignment of all rights in Denitro.

Thenceforward, in secret, the War Department proceeded jubilantly with its plans. In carefully guarded laboratories, under strict military surveillance, millions of little steely-gray capsules were being manufactured, to be stored away in government arsenals; while special guns, a little like large repeating rifles in appearance, were being tested for the discharge of the new projectiles. It is not known just how many of these weapons were provided, but it is common gossip today that more than three fourths of the huge military budget of '79, which the War Department forced upon the legislature in a special session, was devoted to Denitro. It is reported, moreover—and no adequate denial has ever been made—that the generals and war ministers not satisfied with the hope of smashing Trans-Danubia into abject submission, moved on to still more vainglorious thoughts, and entertained ideas of conquering the whole of Europe, Asia and America by means of the new weapon. It is manifest that there would have been no safety for the rest of the earth had these fanatical militarists had their way.

CHAPTER IV

THE sequel has already been described: the uncompromising military attitude of Premier Lupescu, the unwarranted assault upon Trans-Danubia, the outbreak of

war, and the spectacular victory, in which hundreds of thousands of Trans-Danubian troops lost their sense of equilibrium.

Would that we had been able to halt at this point! For this, if the truth be told, was as much as Lupescu had contemplated in any of his plans. He had foreseen only the phenomenal triumph, the crushing of the Trans-Danubian power, the expansion of his prestige and authority, thanks to the new weapon of military supremacy. In his enthusiasm, he had forgotten that he had unbared a two-edged sword; he had forgotten the ancient truth that more than one can play at the same game. And he apparently had had no fore-glimmerings of the catastrophe that lay in his path.

Yet already he might have read the handwriting on the wall!

Amid the horror and dismay that shuddered across Trans-Danubia at the news of Lupescu's great victory, the leaders of the latter country did not lose courage. Though one army had been incapacitated, they had another in readiness, formed mostly of youthful recruits; and within a day or two they had not only taken the field again but had reoccupied most of their lost trenches, thanks to a means as unexpected as it was successful. The terrible news burst upon the world like a bomb-shell! The Trans-Danubians also were provided with Denitro! By means of the steel-gray explosives which they used, they had caused a million Checko-Balkans to lose their equilibrium!

Stunned as he was at these tidings, Premier Lupescu was not long in divining the truth. Even in the late twentieth century, unfortunately, there were such persons as spies and informers! Even in the late twentieth century, there was such a thing as the

almighty power of gold, against which no secret was safe! To this day it has not been established who the traitor was, though no less than a hundred suspected ones were executed; all that is clear is, that some one high in the councils of the Checko-Balkan Government had copied the formula of Rosencrantz's invention and turned it over to the Trans-Danubia.

But this also we know: that very action, whoever was responsible for it, was the root and source of all the abominable evils that have ever since infested the earth.

CHAPTER V

NOW that both combatants alike were equipped with Denitro, the sensible course would have been apparent to the intelligence of a five-year-old. Better make peace at once, or at least outlaw the use of the new weapon, rather than risk its continued application by both sides! But when, alas! has the sensible course ever been followed by the parties to a war? Under the urge of an emotional hysteria, each sought not only to retain Denitro, but to employ it to the utmost advantage. And the result, naturally, was that the two conflicting countries became more than ever like cocks with spurs, each intent on hacking the other to bits.

Relentless in their determination to win by means of Denitro, the Checko-Balkans began to apply it with the most prodigal recklessness. So abundantly did they scatter it over the Trans-Danubian lines that, had not each of their moves been followed by an equally ferocious move on the part of the foe, they would unquestionably have won the war within a few days. But since each of their attacks was matched by an equally ferocious coun-

ter-attack, their relative position remained unchanged, while by rapid degrees their entire army was losing its equilibrium.

In fact, after a single week, only a handful of soldiers on either side still retained their balance. Worse still! not only the rank and file but the generals and chiefs of staff had surrendered whatever ability they had ever possessed to stand upright; while, due doubtless to the activities of spies, Denitro bombs had been exploded in the national Capitols of each of the warring Powers, with the result that the Presidents and Premiers of both countries, along with all the high ministers, legislators and judges, had become completely unbalanced.

Yet now that the civil officials, no less than the army, had lost their equilibrium, the war proceeded more bitterly than ever, with consequences that promised to be tragic beyond all reckoning. It was only when an attack had been planned upon the civil population; only when aviators had been commissioned to drop Denitro bombs upon the chief cities of both countries, that the League of Nations saw fit to intervene, and, by means of its international police force, it put an end to the hostilities and compelled all further differences of the two nations to be settled by arbitration.

It was more than time for such outside interference. Already one man in every four, in the Checko-Balkan Republic no less than in Trans-Danubia, had lost his balance forever; and not only were the hospitals of both lands overcrowded with the helpless victims of the explosive, but the streets of the cities to this day present a pitiful sight, with thousands of victims who can barely crawl on their hands and knees.

Meanwhile both sides in the recent

war continue to blame the other for the use of the dread, new weapon, while Dr. Joseph Rosencrantz, the innocent cause of it all, has been excoriated without mercy, and has been driven for refuge no one knows where—some say to Java, others to Greenland or Antarctica. The worst of it all, however, is that the menace is not yet ended. It is an open secret that both the Checko-Balkan and the Trans-Danubian authorities, in defiance of the terms of the Peace Treaty,

have been manufacturing and laying away huge supplies of an improved and more deadly Denitro, for use in the next war, which is expected at any time now. Unless the League of Nations steps in with unusual alacrity and puts an end to the hostilities, it is to be feared that the conflict will be even more devastating than its predecessor, and that at its close not one man, woman or child in either of the embattled lands will be able to stand on his own feet.

THE END

Science Questionnaire

1. What is the theory of the origin of the decimal system of numbers? (See Page 10)
2. In what way would a duodecimal system be better? (See Page 10)
3. Is the English pound sterling and the guinea ever employed in the same transaction? (See Page 11)
4. Are there some inconsistencies in our scale of linear measurements? (See Page 11)
5. What is the origin of the expression "coming down to brass tacks"? (See Page 11)
6. What is the surveyor's chain? (See Page 12)
7. What change in measurements is to the credit of the French Revolutionists? (See Page 12)
8. What is a specially good segment of the meridian for direct measurement? (See Page 13)
9. Where is the black spot the "Horse's Head" or "Fish Mouth" to be found in the heavens? (See Page 15)
10. What is the ecliptic? (See Page 22)
11. Are all the planets in the plane of the ecliptic? (See Page 22)
12. What is to be said about Mercury in this relation? (See Page 22)
13. What are aphelion and perihelion? (See Page 43)
14. Describe the atom and molecule. (See Page 44)
15. What approximate angle do both sun and moon subtend as seen from the earth? (See Page 54)
16. How long is the moon's day? (See Page 62)
17. How was the Neanderthal man related in era to the Cro-Magnon? (See Page 118)
18. What is the geological age of the Cro-Magnon Man? (See Page 124)

The Last Neanderthal Man

By ISAAC R. NATHANSON

Our author is at his best in this beautiful and tragic study. It is a story of the primitive world, inhabited by the Cro-Magnon race who still had to fight to protect themselves from the Neanderthals.

A STRANGE cry, clear yet far off, came through the primeval wild. The entire clan froze in their tracks, keen senses alert. They listened for a repetition of the sound. None came; only the familiar sounds of the wooded valley. At a signal from the leader, they resumed the march.

It came again, this time much nearer and louder and more drawn out, a cry utterly weird and blood-curdling. Few among that band of men, women and children had ever heard that sound before, not even their wise chief or leader. There was something horrible and fear-producing in that strange cry; a cry monstrosously human yet so ferociously bestial that, even in a world still young and fiercely primeval, it awoke all the fear of the ages in those who heard it. Abruptly they halted again; drew closer for mutual protection. A few stragglers hurried to join the main body.

As they stood in puzzled silence, uneasy eyes plaintively questioning each other, the quiet was again shattered by another cry, still closer and louder, that went echoing and reechoing up and down the valley and back again from the heights above the river. Almost immediately there came an answering cry from afar; another, and still another.

The frozen silence of the uneasy

listeners was broken by the shaky voice of an old man.

"The Gur-r-ri," he exclaimed in a tone of incredulity mingled with fear.

"The Gur-r-ri," echoed an old woman, in an equally awed voice.

At the sound of the dread name, a nameless fear swept over the assembled band. Some of the little ones whimpered and clung to their mothers. An angry word from the leader, whacks from the mothers, quickly brought silence to their whimpering offspring.

The chief or leader spoke to the old man in a low voice. The latter nodded vehemently and again repeated the dread name.

It was indeed hard to believe. An entire generation since anyone had come across a single survivor of the "Gur-r-ri", that strange species of man known to us moderns as the Neanderthal or Mousterian man, who lived in the Ice Age till the close of the Lower Palaeolithic. To the migrating little tribe or clan on that prehistoric day, the final extinction of that dread humanoid which tradition had brought down to them under the name of "Gur-r-ri", had for years been taken as an accomplished fact. During a vast portion of the Palaeolithic or Old Stone Age, for perhaps twenty thousand years or more, those weirdly human Mousterians or Neanderthals were to be found throughout the



In stature, the apparition was not as tall as the men of her kind, but huge and thick-set. His barrel-like chest and tremendous arms and shoulders bulged and rippled with enormous muscles.

length and breadth of Western Europe and the entire Mediterranean, including Palestine and North Africa; the dominant and most feared hunters of all the wild life of a wild world. They fought with the gigantic cave-bear and the even fiercer cave-lion for the shelter of the caves, and trapped and hunted the hairy mammoth and the woolly rhinoceros which abounded in that age of ice and hardship.

Then, with the first slight amelioration of the damp and cold of the ice-bound western world, came wave after wave of a new kind of men, the Cro-Magnons, the first of our own kind, who swept the Neanderthals out of existence.

And it was a long and fierce struggle for supremacy between these two so very different kinds of men. Nor did *Homo neanderthalensis* fail to exact a dreadful price. For the two species were irreconcilable, would not or could not mix. Both wanted and needed the same caves and rock-shelters, the same sources of flint, the same hunting grounds. And the blood-fueled once lit, could have but one ending. It was a struggle to the finish; long as judged by the life of the individual, short and fierce as judged by human history. Not even the women of the beaten Neanderthals were spared or wanted by the conquerors, so repulsive must they have been to their sight; no truce till the last man, woman and child of the species had disappeared into the Everlasting Beyond.

But before it was over, the fear of their terrible antagonists was bred in the very marrow of the bones of generations of Cro-Magnons. The endless raids, the counter raids, the everlasting-battles. Children grew up in the traditions of the struggle; the epic

stories common nursery tales told and retold, crying little ones silenced by a mere threat of the "Gur-r-ri".

No wonder, then, that our little migrating tribe was so astounded and perturbed at hearing the living voice of a dangerous enemy, for years considered as at last completely exterminated. Strange that it had not been reported before by some of their own near or far-off kindred tribes. Could old Flint-Maker and the other old one be mistaken, a victim of past fears? Both gray heads shook in vehement reaffirmation: once heard, that cry could never be mistaken. Then undoubtedly some back-waters of the great wilderness had preserved some remnant of the dreaded Neanderthals, had spewed them out into the open, their shuddering cry flinging a last fierce challenge to their conquerors.

But these heroic Cro-Magnons of the Old Stone Age were men that were not afraid. Quickly regaining their courage, the little tribe or clan, scarcely a hundred souls—the burgeoing of modern mankind had not yet begun—resumed the march, women and children in the center, able bodied fighters in front and rear and guarding the flanks. If any of the "Gur-r-ri" dared attack, they would know how to deal with those powerful and ferocious but oft stupid humanoids. Nevertheless, the march was renewed in hushed silence, every eye and ear and quivering nostril at attention. There were no stragglers.

IT was a late summer's day in the dawning Upper Palaeolithic, about 25,000 B. C. The long Mousterian Age with its dominant Neanderthals was ended, and the conquering Cro-Magnons with their superior Aurignacian culture were in virtual

possession of the land. Eighteen days since our little tribe had started its leisurely southward migration from their hunting grounds of the Loire; and now were in the valley of the Vezere River, a tributary of the Dordogne in southwestern France. They were on the way to the friendly rock-shelters and grottos further south-west, which were their winter homes. The mild but all too short summer was swiftly drawing to a close. Already the chill in the air, especially during the nights, heralded another of the long, severe winters of the Post Glacial Era. For despite the retreating Ice Age, which in a sense was not yet over, and though the age of severe glaciation was moderating, the cold of the winters was still intense, and the blizzards which swept the tundra-like plains and over the redeveloping meadows and forests of the valleys, a threat to all life on the move.

The new land which the Cro-Magnons had wrested from the Neanderthals was a paradise for a people who subsisted on the chase. England was still connected with the continent, and wide land bridges tied southern Europe to Asia and Africa. The steppe lands abounded with herds of the woolly mammoth and the two-horned woolly rhinoceros, both now extinct. Over the open spaces roamed herds of reindeer, wild cattle, the wild horse, and the kiang or wild ass. In the meadows and forests were countless red deer, roe deer, elk and the now extinct giant deer; cave-bears, wolves, hyenas, and a host of other large and small game. Even the fierce Asiatic lion, larger than any living to day, was present in great numbers. The hills and mountains contained the ibex, sheep and other forms of Alpine life. Probably never before, in any like area, was there brought together such

a large representation of noble game of different climates and diverse origins, as then abounded in western Europe.

For the rest of that day, after those first startling announcements that the dreaded "Gur-r-ri" were again abroad in the land, our little tribe continued steadily with their southward march. Not another sound or sign, although they kept a strict lookout. Perhaps they had passed them by.

They marched with an easy swing, carrying but few impediments. An extremely graceful race; the men tall, broadshouldered and muscular, faces short and broad and square-jawed with high and prominent cheekbones; the women, though considerably shorter, well-rounded, strong and full of grace.

The men wore short garments of animal skins well fitted about their hips and thighs, connected front and back by a broad strip over one shoulder. Sandals of animal skin protected the feet. The garment worn by the women and girls was of a somewhat longer cut, almost a short skirt. Their firm breasts were uncovered. From furry folds, slung from the neck or shoulder of some of the women, peeped bright-eyed infants. Necklaces and bands of stones and shells or animal teeth graced the necks and secured the hair of the men as well as the women; wide bracelets and armlets adorned wrists and arms, earrings dangled from earlobes. On the faces and bodies of the full-grown men were dabs of paint; some had one or more long feathers in their hair, reminiscent, had a modern been there to observe, of the American Indian, of another race and another day to come.

At the men's waist were imple-

ments of the war and chase; a long flint knife, a flint axe, a dart-thrower of wood or ivory, and over the shoulders a quiver of sharp-pointed darts. The bow and arrow was a great invention as yet unborn. A flint-tipped spear with a long wooden shaft was grasped in the hand—a formidable weapon in their strong hands indeed, capable of driving through the tough hide to the heart of a mammoth or rhinoceros.

To the front of the marching band, was Deerfoot, full-fledged hunter and fighter, in all the pride of his six-foot, three, of sinewy youth. He walked with a free and easy stride. From time to time he turned a swift yet almost timid glance toward Babbling-Brook, not a dozen paces away, whose faintly smiling, brown eyes returned his glance in enigmatic silence.

She, too, walked with that free and easy gait so characteristic of their race. A small bundle of domestic implements was balanced on one shoulder. Almost eighteen she was, yet no man had claimed her as his own, although most girls of her age were mated. Her derisive laugh and mocking eyes discomfited all those who had thus far made bold to approach her. Taller than average, her sun-and-wind browned face and body radiated all the wild beauty of her kind. Her long brown hair was gathered at the back of her shapely neck; around her forehead a becoming bandeau of wolves' teeth and shells. One of her small but firm breasts was exposed, the other partly covered by the strip of fur that draped over one shoulder and supported the garment which fitted snugly about her well-formed hips. A necklace, several armlets of shell and bone, high sandals laced about her slender ankles, completed a picture that any movie director, of

a far future, yet undreamed of, would have given much to obtain.

Never in all his proud twenty-one years did anyone affect Deerfoot as did Babbling-Brook. Fearless and capable of outstaring a cave-lion, nevertheless he could only raise his eyes to hers with a mighty effort. More than one of the young men had indeed remarked there must be magic in her eyes, for they, too, had found it embarrassing to stare long at her. In truth it was said that her mother had been well versed in potent magic, and she no doubt had learned much of the secret art from her. More than once, if some young man became a trifle too insistent in his attentions, like some bear about a honey pot, and her mocking eyes and derisive laugh was not sufficient to drive him off, her threat to cast a magic spell to hamper his powers in the chase, sufficed to send him away in trembling haste.

But to Deerfoot she was as a virgin goddess divine, tormentingly desirable, yet unapproachable and perhaps unobtainable. A mere flash of her inscrutable eyes was wine that went singing and quivering through his veins. Not yet, but some day he would dare offer her the permanent protection of his strong arm against all comers.

THE first slanting shadows of the Late Pleistocene sun called a halt to the marching tribe. There was still two hours or more before sunset. While the women busied themselves with the camp, the slow building of fires and other domestic duties, ten or twelve of the hunters fared forth in search of game. That would not be hard to find. The chill of approaching winter was bringing large numbers of migrating game down the Vezere

valley and over the open spaces beyond the heights.

Before leaving, Deerfoot made bold to cast a lingering glance at Babbling-Brook. She affected not to notice him, although deliciously aware of his calm but all too eloquent eyes resting upon her. Proudly he fell into place behind Strong-as-a-Mammoth, their leader, immense shoulders swaying somewhat self-consciously in rhythm with his long stride, his browned body the epitome of grace and strength. Scarcely less heavy than the enormous spear carried by the mighty Strong-as-a-Mammoth, was the flint-headed spear in Deerfoot's hand. At his shoulder was the bundle of almost needle-sharp darts, as well as the carved and ornamented dart-shooter—together a most deadly weapon in skilled hands.

But a pace or two behind, walked Bear-Killer, almost of the same age, and sworn to eternal brotherhood with Deerfoot in life or death. Had not their mutual bond been sealed in sacrificial blood during one of the sacred intertribal ceremonies, in token of which each had parted with the first joint of the little digit of the left hand?

Soon the brown bodies of the hunters disappeared in the brush.

The camp site, a short distance from the river, hummed with its primitive routine. Old Flint-Maker, and one or two others, industriously chipped and fashioned flints. The women and girls were busied with their skin-scraping and sewing and other domestic arts; chatter and scolding and laughter ebbed and flowed.

Three of the stalwarts, left as a home guard, wandered off in quest of small game in the immediate vicinity, followed by some of the half-grown lads. The more than two score of lit-

tle ones played and romped, or practiced with small spears or darts in imitation of their elders. Some played the ages-old game of hide and seek. Occasionally a warning call from some anxious mother, followed not infrequently by a vigorous slap, would bring a too-far wandering child back within the folds of safety.

The peaceful routine of the camp was all of a sudden shattered by the appalling hunting cries of the dreaded "Gur-r-ri" almost right in their midst. The laryngeal structure of those humanoids was capable of an amazing volume of throaty sound, paralyzing in its fear-producing effect. And almost immediately a dreadful shriek, appalling in the sheer intensity of its terror, arose from one child, who had wandered off a trifle too far. Again and again the dreadful shrieks echoed and re-echoed—then as suddenly were stilled.

A fourth guard nearby, sprinted toward the child and was stopped in midstride by a large stone hurled with terrific force, which split the Cro-Magnon's skull like an egg-shell.

Babbling-Brook, also near by, ran around a clump of tall bushes to see what was going on, and was frozen with horror at the apparition which confronted her not a dozen paces away. From her earliest nursery days, the oft admonishing threat of the "Gur-r-ri" had been burned into her memory. And although none of her younger generation had ever seen a living Neanderthal man, this actual encounter, with one of these strangely human creatures in the real flesh and blood, held Babbling-Brook with the horrible fascination of paralyzing fear.

In stature, the apparition was not as tall as the men of her kind, but huge and thick-set. His barrel-like

chest and tremendous arms and shoulders bulged and rippled with enormous muscles. His heavy torso stooped forward from the hips; his short, stout legs bent peculiarly at the knees. The large head, disproportionately large even for his body, was flattened on top and thrust forward at a grotesque angle from a short bull-neck sunk between the shoulders, a neck that could scarcely be called a neck. Large tufted ears kept twitching, making the head appear even larger than it was. But most horrifying were the big, sunken, red-rimmed eyes, much bigger than in our kind of man; which stared from a massive, chinless masklike face. The enormous, bony eye-brow ridges, covered with bushy eyebrows, from beneath which the cavernous eyes glared banefully, added to the frightfulness of the face. Shaggy hair fell manelike from the low, retreating forehead and down the stooping back. Most of the body, naked except for an ill-fitting girdle about the loins, was covered with long, shaggy hair which added to the repulsiveness of the creature. In one huge hand he gripped a short but heavy flint-tipped wooden spear, in the other a wooden sling or stonethrower, a large, sharp-edged stone in the cleft ready to be hurled with almost the force of a bullet. A flint knife and a heavy hand-axe were secured to his waist. Altogether, Neanderthal man was a fearsome creature for our forebears to encounter: Human, yet a monstrosity; clumsy and stupid after a fashion, yet powerful and resourceful.

For a few paralyzing moments Babbling-Brook stood frozen; had a fleeting glimpse of the limp form of the child slung over the shoulder of another of the monsters. Then, as the huge Neanderthaler began moving to-

ward her in that peculiarly stooped and shuffling gait characteristic of his species, the girl let out a terrified scream and turned in headlong flight.

The remaining three stalwarts came forward on a swift run, yelling their fierce battle cry. Old Flint-Maker and the half-grown boys and some of the women followed in their wake, creating a terrific din. The frantic mother pointed to where the child had disappeared. In the near distance several shadowy forms melted into the thick bush.

A loud wailing broke from the women, imprecations from the men. Old Flint-Maker chattered in impatient rage, and began making magic with mysterious words in queer intonations, calculated to throw a spell on the gruesome marauders.

Without hesitation the three stalwarts, followed by several of the larger lads, plunged after the enemy. The blood-stained trail led straight toward a rocky ravine. Going became increasingly rough and dangerous. A fatal ambush could be expected. The pursuers halted momentarily to take council.

The next instant, several throwing-stones whizzed by—loud thuds as they struck nearby tree-trunks. Another bowled over one of the men, knocking him cold; and still another struck one of the boys, who screamed with pain.

Loth to give up the chase, yet realizing the danger not only to themselves but to the virtually unprotected camp, the two uninjured men decided on a hasty retreat, carrying their unconscious comrade with them.

Back in the camp, the entire valley rang with urgent cries, calling back the absent hunters. Smoke signals rose above the tree-tops. All awaited

the answering signals which they knew would come soon.

They did not have long to wait. Presently, from far off, came the faint war-cries of the main body of the Cro-Magnon fighters; grew rapidly louder.

Babbling-Brook's keen eyes were the first to spot the returning hunters. With hidden pride she pointed to the swiftly running figure of Deerfoot who was far in the lead. How he could run! He ran with no effort, his long body bent forward and fairly skimming the ground. The others, though also running swiftly, trailed far behind. The entire clan ran forward to meet them.

The tragic story was soon told. When Strong-as-a-Mammoth heard it, his rage was frightful to behold. He leaped several times straight into the air, giving vent to terrific war whoops; then forthwith seized a growing sapling of considerable size, and with a single effort of his primitive muscles snapped it right off, thereby somewhat appeasing his rage.

Babbling-Brook recited her experience, her terror-stricken memory adding to the monstrosity which had confronted her. Everyone shuddered. Deerfoot listened with a tug at his heart, concerned yet happy at her narrow escape. His hand tightened on his spear.

In the immediate council of war which followed, it was determined that the "Gur-r-ri" should pay dearly for that raid. But the hour was now too late to take up the immediate pursuit to avenge the slain. The little one was beyond all succor, the enemy no doubt far away, their trail hidden by the fast approaching darkness of night. Pursuit would have to wait till the morrow.

THE night-fires lit a busy scene of preparation for the coming war against the "Gur-r-ri." Fresh coats of war paint; additional supplies of new weapons; retouching of old ones. If the numbers of the resurgent enemy should prove too great, willing aid could be had from kindred tribes not far away. They would deal with those demons as their fathers and grandfathers had done—extermination, root and branch. For so long as a single Neanderthal man was afoot in the land, neither they nor their women nor little ones could be safe. The unsavory reputation for cannibalism, though it could not be laid at the door of all Neanderthals, was not unknown among some branches of that race, whether for their weirdly religious or sacrificial rites or just plain cannibalism, it was not certain. And equally monstrous and more, as far as the women were concerned, and another reason for which the "Gur-r-ri" were so much dreaded, was their evil propensity, if given the chance, for carrying off the fair women of the Cro-Magnon race—in itself a potent reason for their utter extermination at the hands of the infuriated men of the Upper Palaeolithic.

The preparations for war were accompanied by strange rituals. The able-bodied warriors drew apart in a ceremonial, which to the uninitiated, the women and children was taboo. Old Flint-Maker, who was also the priest or medicine man, recited mysterious words of magic, and went through a lot of fancy contortions, calculated to strengthen the arms of the men and destroy the evil power of the enemy. Without this wondrous magic, the expedition might not prove successful. Most impressive and of undoubted efficacy for putting the

enemy in their power, was the engraved likeness of a figure crudely resembling one of the hated "Gur-ri,"—the heart plainly outlined with several spear-heads pointing toward it—which the cunning old fellow had contrived on the smooth shoulder-bone of a mammoth. Over this engraved mammoth bone, the magic-maker howled and chattered with vehement contortions, while the others looked on in reverential awe, from time to time giving accent by fierce shouts and violent passes with their weapons.

Silence finally settled over the camp. An alert guard kept vigil. Not that they feared any of the large and fierce animals which roamed the Pleistocene wilds, but they knew only too well that fires were no protection against that tool-using, fire-making animal, who had shown his ugly hand.

The first break of day, brought a stir. The savory odor from roasting spits awoke a hungry response from digestive systems that for many milleniums yet to come would know naught of divitalized foods. For the time being the gastronomic lure overshadowed all else; our forefathers were the true realists.

Then came the business of burying the dead fighter. It was a most important ceremonial for these deeply religious, early men. No one, they thought really died, but moved on; it was a change, a continuation. As a full-fledged hunter and fighter, the interment was carried out with all the time-hallowed rituals of the tribe. A sheltering cave under a cliff was chosen as his resting place. As he was only asleep, his spirit merely away, he was laid to rest on his side, face to the entrance and bedecked in his full panoply of war-paint, best weapons, and favorite ornaments. Useful vessels

laden with choice foods were put at his side, sufficient for his long journey to the spirit world.

At the conclusion of the interment, the slain warrior's mate and nearest relatives set up a loud lamentation. The spears of the fighting men of the clan crossed over the grave with a clang. Flint-Maker spoke some symbolic words. The men had sworn eternal vengeance.

The grim business of tracking down their unspeakable foe then followed in earnest.

Deerfoot managed a few fleeting minutes with Babbling-Brook. To his amazement, she dropped her usual reserve; and he was thrilled to the marrow of his bones by an indefinable tenderness in her expression, thrilled to the soft caress in her sober, brown eyes. For the first time she seemed agitated in his presence. And he wondered . . . suppressed an almost intolerable desire to throw his arms about her lithe, browned body. But these Cro-Magnon men of the Old Stone Age respected the fine freedom and independence of their women. Not yet, nor for some milleniums to come, in a different time and culture, would the feminine half of mankind be rudely subjected to the other half.

Deerfoot was jerked from his enraptured state by the deep voice of the chief calling the men to action, and hastened to join the main body of full-fledged fighters. Twelve-strong and fully armed for war, they fell in behind Strong-as-a-Mammoth, on the trail of the "Gur-ri."

Swiftly and silently, like avenging shadows, they followed the trail, all too plain to their trained eyes. Equally versed in all the lore of the wilds, but much wiser than the ferocious and stupid Neanderthalers, the

Cro-Magnons never betrayed their whereabouts on the trail by giving unnecessary voice. Their methods of attack were better planned, and if less ferocious, were carried out with greater intelligence and co-operation. In this the true conquering spirit of *Homo sapiens* showed itself. And their weapons were better made and of greater variety and effectiveness. The huge hand of the Neanderthaler, though immensely powerful and capable after a fashion, was not equal to the finer tools wrought by the Cro-Magnon. For one thing his thumb was too short and not in perfect opposition to the other fingers. His stooped and shuffling posture was not well suited to look up at the stars. Of mere brains, pressed down beneath his flat skull, this strange cousin of ours had plenty and even more than the savage of many living races. But the quality of his brains!

The Cro-Magnon followed the trail down the valley, up the wooded heights above the river, and along the upper terraces where a rocky stretch made the trail hard to follow. Their rapid pace slowed down.

Scarcely had they gone an hour, when from far off the horrible hunting cries of the "Gur-r-ri" smote their ears. As one man they halted abruptly: to their utter horror and consternation, the cries of their enemy came not from the direction they would have expected, but, plain as could be—from the direction of their own camp!

Almost immediately came the distant echo of agonized screaming in the unmistakable voice of their own kind, followed by a chorus of frantic calls and signals.

There could be only one meaning: the wily enemy had outsmarted

them. Evidently bent on repeating their orgiastic raid of the day before, the Neanderthalers had no doubt circled the Cro-Magnon camp from a different direction, thus avoiding the avenging fighters, and struck again; this time with who knew what dreadful results.

The infuriated men began a race for home. Unspeakable fear clutched at their primitively savage, yet utterly human hearts, in whose veins flowed the same kind of blood as ours. And uppermost was their desire to come to grips once and for all with these last remnants of the hideous race.

In a fraction of the time they retraced the distance which separated them from their loved ones, a fast moving, avenging tornado of flint and muscle. First to arrive was Deerfoot, his chest scarcely heaving despite the top speed at which he had been running.

Again a dreadful story awaited the men. Another child had been spirited away. Old Flint-Maker and two of the young lads had been slain by the murderous "Gur-r-ri." And—horror of horrors—Babbling-Brook had been forcibly carried off to an unspeakable fate.

Though it was certain that several of the "Gur-r-ri" had participated in the swift second raid, the terror-stricken survivors differed as to the exact number. To their inflamed imagination, the attackers and their deafening roaring had seemed legion. The child had been instantly slain. The screaming and struggling girl was carried away alive on the shoulders of a huge, shaggy Neanderthaler, who seemed to be the leader, his victim's weight as if but a mere plaything. And Flint-Maker and the two brave youngsters who had sought to

interfere had been speared to death. The raiders had struck and departed with paralyzing suddenness.

When Deerfoot heard the tale, he was almost beside himself. An agony of fear for the dreadful fate of Babbling-Brook almost overwhelmed him. The grief of the entire clan gave way to a concerted outburst of fury scarcely possible of description.

One tragedy after another had of late stalked the little tribe. Only a short time ago, two able-bodied hunters, in a fight with a charging mammoth, had been trampled to a pulp by the infuriated animal. A boy had fallen off a cliff to avoid the rush of a cave-leopard, and broken his neck. And the week after that, a woman and a child had been carried off by the gigantic cave-lions which terrorized the Europe of that age. And now, to cap it all, this terrible climax, from a source which, though frequent a generation or two ago, they had least expected of all.

But these lion-hearted Palaeolithic men did not for long give themselves up to their grief. They were altogether too sane and practical, and their outburst, though intense, was brief.

Strong-as-a-Mammoth immediately dispatched a runner to a kindred tribe some miles to the north. Well they knew that the tale of tragedy and the reappearance of the creatures, thought of as exterminated "Gur-r-ri", would quickly bring their full quota of strong-armed revengeful fighters.

Without waiting, however, for the several hours which must elapse before their kinsmen could arrive—for to save the girl, time was short—Strong-as-a-Mammoth and his fighters immediately plunged after the enemy.

THE fresh trail soon revealed that four of the "Gur-r-ri" had made the raid. Of Babbling-Brook's small footprints, at first they could find none. So she must have been carried. But some distance down the valley, they found where her trail began to mingle with those of her abductors. The emotions of the men, especially of Deerfoot, which the sight of those small footprints among the large footprints of the hideous enemy aroused, is easy for us of kindred descent to understand. They pressed on in ferocious silence, keeping in wide-open formation to avoid detection, a wary eye and ear for a surprise attack.

The trail wound along the upper heights of the valley, then through several rocky ravines. Here the Cro-Magnons had to use the utmost caution to guard against possible ambush. Though brave and fearless to the last drop of blood, they could not afford to take unnecessary chances, for so much depended upon their own safety.

The trail grew hot, and a little further on they came across signs which confirmed their belief that more than four of the "Gur-r-ri" were abroad in the land. At any minute they could expect to catch up with the enemy.

Rounding a headland, they saw smoke rise above the tree-tops. They moved more cautiously than ever. Another few minutes, and the open camp of the Neanderthals came into full view.

The four marauders with their quarry were just then in the act of arriving in camp. The abducted girl's arms were secured with a long thong wound about her body. She walked in front of one of her abductors who held a threatening spear at her back. The entire "Gur-r-ri" horde rushed forward to greet the arrivals, and

the poor girl could be seen to shrink in abject horror and fear.

At the maddening sight of Babbling-Brook alive in the hands of the monsters, Deerfoot with difficulty restrained himself from rushing forward, but obeyed the previous instructions of their capable leader. In keeping with their tactics, the men spread out fan-wise in an encircling movement.

From behind fallen stumps and trees and rocks, the Cro-Magnons beheld a sight the last vouchsafed to men of our kind—the Neanderthalers at home. There were about seven or eight full grown males, as many females, and about twenty or more young of varying ages. The Neanderthal horde had taken up their abode on a high terrace overlooking the Vezere. The terrace ran back several hundred feet to the base of an overhanging cliff which offered a spacious rock-shelter. A large opening at one place in the cliff was the entrance to a grotto that gave shelter during the chilly nights and a refuge from the severe cold soon to come. Just then, with fair weather still prevailing, and the midday sun shining, the entire horde had centered their activities on the open terrace some hundreds of feet from the grotto. The immediate area had been cleared of all large obstructions to prevent the too close approach of an unseen foe.

THE camp environment was in a state of great filth. Unlike the cleanly and artistic-minded Cro-Magnons, the repulsive Neanderthalers were far from fastidious in their personal and collective habits. The stench of their camp and the ill odors of their bodies were wafted to Deerfoot's nostrils; and it made him sick with revulsion—that Babbling-Brook

should be right in their unholy midst.

The vengeful fighters had by now encircled the enemy on three sides. Escape would be impossible, except toward the shelter of their grotto, or on up over the high cliffs to the plains beyond, where the fleet-footed Cro-Magnons could easily overtake them.

Deerfoot carefully shifted his position, the better to observe the fair captive. She was tied to a huge boulder, a pitiable picture of horror and disgust, and an object of curiosity to her captors, especially the females and the children, who felt of her shrinking body with their clumsy hands. They were plainly fascinated by the soft feel of her smooth, hairless skin. One old female felt of her, then suddenly and seemingly for no reason at all, struck her a sharp blow with the back of her claw-like hand. The huge Neanderthal man who had taken the girl into the camp, rolled the old female head over heels. He then advanced possessively toward the terrified girl, and she literally shrank within herself, her eyes staring, mouth partly open as if to scream.

Despite the discipline to which they were trained and sworn, and despite the fear of incurring the wrath of his chief, Deerfoot, at the sight of the Neanderthaler advancing toward the girl, could restrain himself no longer. But that instant the mighty voice of Strong-as-a-Mammoth gave the fierce battle cry of their tribe. Like an unchained bolt of fury, the Cro-Magnons took up the cry and launched straight for the enemy. As they conveyed upon the startled Neanderthalers, they shot volley after volley of darts. Some found their mark. Screams of fright and pain clove the air. So preoccupied were the Neanderthalers since the arrival of the marauders, that they had neglected their

usual lookout. Evidently they had not foreseen such quick reprisal, and the tactics of the infuriated but disciplined Cro-Magnons had taken them completely by surprise.

For brief moments pandemonium reigned. Then quickly recovering themselves, the "Gur-r-ri" gave challenge with their dreadful voices and charged forward roaring and fearless to meet the attack. They, too, as they ran in their awkward yet far from slow gait, sent volleys of throwing-stones from their slings with dangerous zip and accuracy. To men less staunch than the infuriated Cro-Magnons, the fearful sight of those roaring, charging, shaggy-haired monsters, with their bulging muscles, their burning eyes and hideous faces, would have been totally unnerving.

Straight for Babbling-Brook Deerfoot ran, his long spear in his left hand, dart shooter in right. A Neanderthaler came charging ferociously straight for him. A throwing-stone whizzed by with bullet-like force, clipping his scalp and drawing blood. In the very act of discharging a dart, the glancing blow caused Deerfoot to miss his aim. There was no time to fit another to his thrower; neither had the Neanderthaler time to aim another stone. Deerfoot shifted the spear to his right hand, and the next moment they closed. Like two gladiators of a much later period, they danced around each other, looking for an opening.

Deerfoot had fought many times before at close range with the gigantic cave-bear, the fierce lion, the battering, two-horned woolly rhinoceros, the ungainly mammoth, the quick-charging bison, one of the most dangerous of all beasts; had even crossed spears with men of his own kind; but never had he dreamed of coming to

such close grips with one of these almost extinct terrible humanoids, who now faced him in all the fury of mortal combat. While Deerfoot fought in deadly silence, the Neanderthaler, stooping low, kept up a fearful roaring and lunging; his large, red-rimmed eyes, from beneath his enormous, hair-fringed eye-brow ridges, burned with almost hypnotic power; the great muscles of his long arms and thick-girth torso bulged with the brute strength at his command.

What Deerfoot lacked in brute strength, however, he more than made up in speed and agility, in quickness of mind, in greater skill with his better-made weapons. The struggle between Deerfoot and his brutish opponent was short and swift. A number of times they clashed spears; then, seeing an opening, Deerfoot feinted and lunged in—the long, sharp point, driven with all the tremendous power of his young muscles, went home. The Neanderthaler dropped to his knees and tore frantically at the spear in his chest. Deerfoot yelled in triumph; his flint knife quickly did the rest.

Impatiently he tore his spear from the quivering flesh of his dying opponent, and continued his forward charge. The air by now was a fearful medley of sound and strife. The battle cries of the men mingled with the roaring of the Neanderthalers; shrieks of mortal pain; savage yells of victory. Even the females and the Neanderthal young fought like furies. They were speared with no compunction; no quarter given or expected on either side. It was a scene of blood and fury such as only the long forgotten days of a young world could reproduce.

Deerfoot pressed on to where he had last seen the helpless Babbling-

Brook. Several times he side-stepped the death-dealing spears; narrowly missed their zippering throwing-stones. He shot a half-grown Neanderthaler, and fought off two of the female furies who sprang at him with their spears, killing one and putting the other to flight. Charging across a gully, he spied Bear-Killer hard pressed and retreating before a lunging Neanderthaler. Bear-Killer's spear had broken off at the shaft, and unable to draw one of his darts, he was bravely endeavoring to ward off the brute's spear with only his knife and hand-axe. In a flash, Deerfoot took in Bear-Killer's desperate predicament. Another moment or two and Bear-Killer's fate would have been sealed. Deerfoot shot a dart; missed. But at the next jump he drove in with his spear as the Neanderthaler wheeled about to face his new attacker. Despite the gaping wound in his side, the brute fought on. But he was no match for the two men who took him in front and behind.

Deerfoot left it to Bear-Killer to finish the Neanderthaler and pressed on; leaped over the prostrate body of a dying Cro-Magnon, on past the mighty Strong-as-a-Mammoth in the act of dispatching a vanquished opponent.

At last arriving at the rock to which Babbling-Brook had been tied, he was horrified to find her gone.

HE spun about frantically. She was nowhere in sight. Bear-Killer came running up rearmed with a slain comrade's spear, his arms and body covered with gore. The savage roaring of the "Gur-r-ri" was dying down as one by one they were slain or driven to flight. The Cro-Magnons were pressing the battle in hot pursuit, slaying the enemy as they over-

took them, young and old, male or female. The last great struggle was taking place inside the grotto, whither a group of the surviving "Gur-r-ri" had taken refuge in an effort to save themselves from the darts and spears of the conquering Cro-Magnons. In rage and despair they fought to the last.

Bear-Killer shouted and pointed excitedly to the mouth of a ravine some distance to the right. Deerfoot looked just in time to catch a glimpse of a huge Neanderthaler disappearing out of sight, with Babbling-Brook thrown helplessly over his shoulder. About fifty paces behind, and endeavoring to follow, was a wounded Neanderthaler woman and two of her young, the protruding shaft of a dart in her thigh hindering her flight.

Letting out a yell of fury, Deerfoot called to Bear-Killer to follow, and gave chase. By the time they reached the mouth of the ravine, the Neanderthaler with his victim was out of sight, but their keen ears could hear him as the brute crashed his way through the underbrush which covered the bottom.

They passed a cleft in the rocky sides of the ravine, where they spied the woman hiding with her young. In a burst of pitiless fury, they stopped long enough to dispatch the group. The fleeing male, hearing their cries, leaped on top of a rocky eminence to get a better view, roaring ferociously and apparently undecided whether to continue his flight or turn back in their defence. But evidently realizing that he was too late, he leaped down and continued his flight, the helpless girl still on his shoulder. In the brief view, they recognized him as the one who had brought the girl into the camp. The beast was no doubt determined to keep possession of her.

Around a sharp bend, they momentarily lost sight of him; but they continued gaining on him fast, and soon came within full view of the fleeing brute and his victim, whose cries nearly drove them frantic. The young fighters redoubled their efforts, yelling demoniacally.

The ravine here led upward and to the left, and gave unto a wide, open terrace that fronted a long stretch of unbroken cliffs. A hundred feet from the ravine, a large opening at the base of the cliff gave entrance to a cavern, perhaps thirty or forty feet in depth and equally wide. A slide of rocks narrowed the entrance. The only avenue of escape open to the fleeing Neanderthal was across the open terrace land, where the fleet-footed pursuers would have quickly overtaken him and forced the issue, or up the steep face of the cliff where he would have offered an easy target for their deadly darts. He must have realized all that, for without hesitation he made straight for the cavern, his pursuers but a short distance behind.

The two men withheld their darts for fear of striking the girl, preferring to close with their spears. Realizing, however, that he would reach the mouth of the cavern before they could catch up with him, they shot their darts, aiming low, when he was but a couple of jumps from the entrance. Deerfoot's shaft tore a gaping hole in his loin covering, but without inflicting any serious injury. Bear-Killer's dart, however, pierced the brute's thigh clear through.

With a roar of pain and rage, the Neanderthal man tossed the girl inside the cave, and turned to face his enemies, grimacing frightfully. They pierced him with two more darts but not in any vital place. He

hurled a throwing-stone, narrowly missing Bear-Killer, and tore at the darts in his flesh. Raging, he leaped inside the shelter of the cave just in time to avoid their lunging spears.

HERE was a quandary. To leave the raging brute alone with the helpless girl was unthinkable. To go in after him, past the partly closed entrance, was enough to give the stoutest hearts pause. In the semi-darkness of the cavern he was invisible to them, but they were plainly visible to him and a target for flying rocks and stones which in his trained and powerful hands were a deadly menace.

The two young warriors drew to one side of the cavern's mouth, momentarily undecided as to the next move, as well as to avoid his flying missiles. But men of a breed who for generations were accustomed to fighting the gigantic cave-bears and cave-lions for possession of the caves, which both men and beasts desired, were not to be held up long by any living creature, not even by a Neanderthaler, more dangerous than any beast. Besides, to rescue Babbling-Brook, they would have faced death themselves.

With quick decision, weapons ready for a struggle to the finish, they hurled themselves straight for the entrance. The brute saw them coming and with the terrible cries of his kind, charged to meet them. A large rock, thrown with terrific force, caught Bear-Killer before he could jump through the entrance, hurling him backward over and over. The terrific impact of the heavy missile had snapped his thigh bone, and he lay semi-conscious and unable to rise. Deerfoot, as he leaped through the entrance, threw his dart, missed, and the next moment the Cro-Magnon and

the Neanderthaler closed with their spears.

Round and round inside the cavern the two circled and fenced, clashing spears, feinting and lunging, weaving in and out, seeking an opening; neither permitting the other to fit throwing-stone or dart to thrower. Babbling-Brook was in a corner urging Deerfoot on. The brute was immensely muscled and powerful, larger and more nimble and skillful than the average of his race. His large burning eyes and his continuous roaring were unnerving. Several times each drew blood, and once the Neanderthaler tripped on the dart that still protruded from his thigh, but recovered just in time to escape Deerfoot's death dealing thrust.

Outside, Bear-Killer, though helpless, had recovered full consciousness and was giving loud distress signals to the rest of the fighters, whose paeans of victory rang from the main scene of the conflict. Welcome answering calls were heard. In a few minutes help would arrive.

Babbling-Brook, temporarily free of her captor, managed to loosen the clumsy thongs which bound her, and grasping a large stone, hurled herself upon the Neanderthaler. The brute, out of the corner of his eye, saw her coming, and with a single swipe of his long arm, rolled the poor girl clear to the other end of the cavern.

This momentary diversion gave Deerfoot an opening. He lunged at the side-stepping brute, missed his huge hairy chest, but caught him well in the shoulder. In the violent wrench to free the spear-head which had lodged deep in the tough flesh, Deerfoot stumbled backward over a pile of loose stones and fell heavily to the

stony floor. The spear was knocked from his hand.

Before he could recover himself, he saw death leaping upon him in the form of the triumphantly glaring, hairy monster, spear ready for the death stroke—saw a body come suddenly between him and the plunging spear . . . receive the full force of the blow. Babbling-Brook shrieked in mortal agony and fell in a heap. Her sudden intervention, however, had saved Deerfoot. Quick as a cat he was on his feet and at the other end of the cavern, one of his deadly darts fitted in the hook of his dart-shooter, ready for action.

The Neanderthaler, not twenty feet away, saw his danger and crouched low, at the same time backing and cautiously loading his sling with a throwing-stone. If his dart missed, Deerfoot realized that, armed only with his knife and hand-axe against the spear of his powerful enemy, he was lost. His own spear was out of his reach. He could hear the shouts of his comrades a short distance away, but he knew that if he missed, the Neanderthaler would be upon him like a flash, and they would come too late.

For a few moments they backed and circled, arms aloft, aiming at each other, separated only by the distance from cave wall to cave wall. Both released their missiles almost simultaneously. But Deerfoot's arm was quicker, and the superior deadliness of the dart truer. The sharp-pointed shaft, hurled with all the force and skill at Deerfoot's command, went straight and true with amazing force, piercing clear through the thick bull neck.

The Neanderthaler threw up his hairy arms with a loud gasp, swayed and sagged. In a flash, Deerfoot pounced upon him with his knife and

axe. It was the end of the last living Neanderthal man.

Almost in a daze, Deerfoot saw Strong-as-a-Mammoth and other comrades as, covered with gore and flushed with victory, they came charging through the cave entrance, yelling and brandishing their blood-covered spears.

He was weak from the long struggle and the loss of blood. He ran to where Babbling-Brook lay, and dropped on his knees before her, a great fear in his heart lifted

the limp form and held her close to his heaving chest.

The glaze in the girl's soft brown eyes cleared for a few moments. She looked up at him and smiled, the while her arms weakly encircled his neck. "Deerfoot," she whispered with a sigh, as the "Great Spirit" slowly closed her eyes in eternal sleep.

Deerfoot rose to his feet, still holding the limp form of the girl in his arms. He looked appealingly from one to the other of the men. Great sobs racked his tortured body.

THE END

In the April issue we will publish

"TWIN WORLDS"

a Professor Jameson story

By Neil R. Jones

Mr. Jones has won great favor with our readers with this series.

During 1937 we are planning to publish the following serials:

"THE FIRELESS AGE"

By Dr. David H. Keller

"ZAGRIBUT"

By John Russell Fearn

We are delighted to publish a serial by Dr. Keller after his long silence.

Mr. Fearn's story is a sequel to his "Liners of Time."

In the Realm of Books

By C. A. BRANDT

SHUDDERING CASTLE. By Wilbur Fawley. Published by Green Circle Books, 381 4th Ave., N. Y. City. 320 pages. \$2.00.

Bluntly speaking, this book is a hoax, but one is hoaxed so pleasantly, that one does not feel irritated. The book starts out quite seriously, pretending that Radio communication has been established between Mars and Earth. Lots of very convincing details make the story quite plausible, and the high point of deception is reached when we are treated to a full description of life on Mars, and how Martian life, very similar in all its aspects to life on Earth has been magically influenced by the radio broadcasts emanating from the Earth. To clinch matters still further, a rocket of strange design is found. Its arrival was mentioned in the radio messages supposed to have come from Mars. The rocket contains a passenger—an ape-like creature who however behaves strangely like human beings. It also contains a scroll of parchment in Martian, which when decoded, confirms the information obtained through the Martian broadcasts.

But the scroll furnished a clever reporter with the first clue that the entire "Martian" affair is a tremendous hoax perpetrated by a scientist of high standing upon an amateur rich scientist, as an act of revenge for having exposed him as a partial faker. From then on the story develops swiftly. The eminent scientist turns out to be insane, and everything else is explained to the readers' entire satisfaction.

The love story which trickles through the book comes to the usual satisfactory conclusion, and the book ends in an orderly fashion. In spite of the misleading first part, "Shuddering Castle" makes very pleasant reading. It fools and teases the reader, but who doesn't like to be fooled once in a while.

THE UNDYING MONSTER. By Jessie Douglas Kerruish. Published by the Macmillan Company, 60—5th Ave., New York. 256 pages. \$2.00.

This is a truly fascinating story of an inherited inhibition. It is a charmingly and forcefully written story of a horror, which has pursued the Hammand family for hundreds of years, always manifesting itself with the senior member of the family, and driving some of the members to suicide.

About forty years before the story starts,

the horror or the monster destroyed Oliver Hammand's grandfather, and now the monster reappears. Swanhild, Oliver's sister, on a clear cold moonless night hears the monster howl hideously from a near-by dense copse of pines. Courageously she investigates and finds Oliver unconscious and badly wounded, lying near his faithful, dead bulldog, as well as the horribly mangled body of a village girl, gruesomely torn as by the claws of an immensely strong and ferocious beast.

They are brought back to the Hammond Castle, one of the most ancient structures in England, and all that Oliver remembers, when he regains consciousness, is that he fought with a very large yet vague something which overpowered him, while he was trying to save the girl. The girl dies a few days later and the countryside is aroused, likewise the newspapers.

Swanhild calls in one Luna Bartendale known as an investigator of occult and supernatural phenomena. Luna examines all clues, ancient descriptions on tombstones, uncovers the secret of the so-called hidden room in the ancient castle, and by clever reasoning hits upon the ghastly secret. By using her knowledge of medieval and prehistoric witchcraft, of Norse Legends and of the mental attitude of peoples of past ages towards religion, vows and curses, she uncovers the lair of the monster—the fifth dimension—the mind of Oliver—in whose subconscious brain, an old vow taken by one of Oliver's earliest ancestors, came to the surface and compelled him to change into a werewolf. By using hypnotic power she suggests to Oliver that the curse of the vow has been lifted, and that the Hammonds are freed forever from the monster.

"The Undying Monster" is built up step by step with convincing clarity and logic, and is plausible throughout. It is in my opinion one of the most brilliantly written mystery-horror stories it has ever been my pleasure to read.

Far Eastern Adventure

THE STOLEN GOD. By Edison Marshall. Published by H. C. Kinsey & Co., 105 West 40th St., New York. 271 pages. \$2.00.

The last time our old friend the "Emerald Buddha" appeared in these pages it was as "The Vanishing Idol," a very clever yarn,

and if you have read it and liked it, you will surely like "The Stolen God" ever so much better, because the story is told by a master story teller.

Mr. Marshall has a decided flair for developing intricate plots and he seems to be on intimate terms with odd and far corners of the Earth. This time he takes us to Laeotia, the Indo-French Hinterland, and even if he has not been there himself he manages to convince the reader that he knows every stone and tree in that location. Now back to the Buddha. The Idol with its mysterious powers of keeping the seething multitudes at peace is stolen once more, and one Ned Holden an American Missionary's son, born and raised in Laeotia and knowing the peoples and their languages is commissioned by the King of Siam to bring the Idol back for the coming high Holidays.

A party of Americans consisting of a rich collector of antiques, his daughter and her fiancé who acts as father's secretary are under suspicion. Ned rigs himself out as a Laeotian Chief and is accepted and hired as a guide for a trip into the practically unknown interior. Queer happenings crowd each other in bewildering sequences, and the story remains a baffling mystery to the very end. There is only one word to describe the story: Excellent.

YOUR WORK ABILITIES. By A. W. Rahn. Published by Harper & Brothers, New York. 134 pages. \$1.75.

The full title of this book is "Your Work Abilities, How To Express And Apply Them Through Man Power Specifications." The title tells the story of the book, for the author has worked out a philosophy and principle, and from them devised a method, by which any one of High School age or over can tell on a single sheet of paper exactly what he can do in the way of work. This presentation of a man's work abilities is objective. It is a clear statement by the subject of the Man Power Specifications of his opinion of what he can do. In this it differs from all other vocational guidance treatises, for there is involved no comparison with the results of tests of other men, a comparison which has been the usual and, till now, the only way of rating men's capabilities.

To indicate the results to be expected from the application of Man Power Specifications to the work-problems of any individual, employed or unemployed, we are told several stories of what happened to a few of the hundreds of people that have used this means of finding work for which they were fitted.

In order to find the answer to the ever present Question in everyone's life—WHAT CAN I DO?—the author starts with a chapter

and chart which show the source of a man's ability to work and the interrelationship of the various mental and physical factors that make a man what he is.

The next step points out the basis of the philosophy on which the method is founded. Here also a chart helps to indicate the fact, not always realized, that the foundation of our American civilization, industry and society, is Man Power. However, in order to be available for profitable use, this Man Power must be expressed in simple work-language, understandable by the man in the street, and must be extended to its utmost truthful limits. Moreover, the fields of activity must be defined, for no man can do any one thing in every line of business.

The book is clearly written, easy to read, and illustrates every point in the methods to be followed by example and extracts from Man Power Specifications that have been successfully used.

This entirely new and highly practical method of ascertaining and defining one's ability for work is of value to the executive—in finding out what his employees can do—to the employed—in making up their minds as to whether or not they are in the right kind of work—and to the unemployed—in finding work by offering their services as a means to a profit instead of asking for a job.

Of major interest is the emphasis laid on the uselessness of job names as a means to describe work. Work language, understandable by everyone, is used throughout in these Man Power Specifications. The foundation of the method is the writing up of a factual description of "What I Have Done." The author points out that, while this is easy to say, it is not so easy to do. When this has been completed the first page of the Specifications is attacked. This is the statement of "What I Can Do." It must be composed by the person making out the Specification. Five functions, including in each case Idea, Concept and Field of Activities, fully describe the work capabilities of any man.

Perhaps their greatest value is the entirely new view of Work as contrasted with Jobs that they bring to the user. The book is convincing as to the soundness of the novel philosophy on which the method is based, and a careful reading does something to one's thinking that is of great value in helping solve problems continually arising.

In short, this book accomplishes two ends. It guides the individual along sound lines in learning how to help himself to a better future and furnishes food for thought on the gains that would be made in the world of business, if this method of self-analysis and exposition of personal abilities were universally adopted.

DISCUSSIONS

In this department we shall discuss every month topics of interest to readers. The editors invite correspondence on all subjects directly or indirectly related to the stories appearing in this magazine.

A Pleasant Letter From the Athens of America. A Correspondent Wanted

Editor, AMAZING STORIES:

For about five years I've been a constant reader of AMAZING STORIES and I think that I owe a large part of my scientific bringing up to your magazine, via the scientific questionnaire.

Now, dear editor, rest in peace, because I'm not writing to you to cast any insinuations deleterious to your magazine. As a matter of fact I want to compliment everyone affiliated with A.S. who assists in producing such an interesting publication.

The science that fascinates me most of all, is the study of chemistry and all its varied phases. Especially am I interested in the chemistry of the rare earths.

Now I wonder, editor, if there is a young lady interested in chemistry *sincerely* enough to condescend to corresponding with a young chemistry enthusiast? I would certainly appreciate one who could *sensibly* correspond with me in matters relative to chemistry. Will you consider printing such an odd request? Remember, though, editor, that for five years I haven't pestered you with any brickbats or the like. I would appreciate a college student about 18 to 20 years old.

ROBERT I. BRADON,
11 Dalton St.,
Boston, Massachusetts.

(We think it probable that you will find a chemical correspondent, and hope that the sex will be what you ask for. Throw all the brickbats you want to, we are well inured to them. It is a positive gratification to feel that we have helped you in your work, and hope we may continue to do so.—EDITOR.)

An Australian Letter of Appreciation and Friendly Criticism. The Distant Friends Always Write Pleasant Letters

Editor, AMAZING STORIES:

Some time ago a very good friend of mine recommended to me your super magazine AMAZING STORIES. Since that time I have been a constant and faithful reader

of it; and have been more than satisfied with the results.

Your magazine comprising science-fiction stories gives the real gems of literature, and the basic theories are quite logical. My favourite authors are "Neil R. Jones" for his "Professor Jameson" series; "Miss L. Stone"; "Dr. Keller"; "Miles J. Breuer"; and "Coblentz." In the April issue the story which impressed me most was "The Pygmies of Phobos" with its graphic descriptions of the future. The other stories with the exception of "The Maelstrom of Atlantis" were not up to the usual standard. Another which I think was exceptionally good was the series "Liners of Time" by Fearn. I would like very much to see AMAZING STORIES published every month and being such a popular and magnificent magazine I should think it would be very easy to have it so. Many of my friends, here in Australia, are of the same opinion, and I sincerely hope that the time is not far off when the magazine is monthly.

Well, I think it is about time that I had a word with your readers:—

Howdy cobbbers,

I suppose, by the above letter, you have got the impression that I am an old antique, but I can assure you I am not. I would like very much to hear from pen-cobbbers from any part of the world, and I promise to answer all letters received. I am interested in all types of sport, by the way I am 16 years of age.

ALAN BRITT,
34 Mill Hill Road,
Waverley, Sydney,
New South Wales,
Australia.

(The English author, Fearn, has made quite a hit among our readers, and we are sure he will be pleased to read what you say about his "Liners of Time." There have been an unusual number of correspondents asking for letters from other correspondents. These we suppose are what you call "pen-cobbbers." You will be sure to hear from some of the many who want to be "cobbbers." The readers of your continent always like AMAZING STORIES.—EDITOR.)

Highly Qualified Approval From a Correspondent Who Shows Some Signs of Liking Us in Spite of All Our Failings

Editor, AMAZING STORIES:

One thing I like about your stories is their plausibility. For instance, in "The Human Pets of Mars," Brett, who knew nothing about the flying machines of the Martians, succeeded in learning all about them by watching them in operation. On the way back to Earth, he outflow and out-fought the Martians, who were superior to him in intellect, in their own ships. This is very plausible.

"The Outpost of Ceres" is an excellent example of a hackneyed plot, in fact, it couldn't be beat. Of course, the author was a little vague as to why Larry escaped the explosion which destroyed the ships from Vesta.

In "The Six who were Masked" we again have a hackneyed plot. However, it is slightly better than the other two.

I dislike "love interest" in science-fiction stories. The only author who could handle it halfway decently was Stanley G. Weinbaum.

However, in spite of all the brickbats I enjoyed "The Council of Drones." It is the best insect story I have ever read, with the exception of the "World of the Giant Ants."

I have not read "Uncertainty," but I imagine it will be good.

E. M. STUBBS,
5308 Wayburn Avenue,
Detroit, Mich.

(We are glad you like the story about bees. To write such a story an author has to be a good apiologist. There is an endless field for study of the little winged citizens of their "regimented" monarchy. Criticism such as yours is of value to authors and editor. Write again.—EDITOR.)

A Letter of "Likes and Dislikes." Our New York Address is Teck Publications, Inc., 461 Eighth Avenue, New York, N. Y.

Editor, AMAZING STORIES:

"Well, it's about time, that I sit down and drop you a line." I have had in mind to do so for a number of days now. So, here goes.

If you would allow me, and don't mind, I would, very much, like to give you my "likes" and "don't likes" on some of your stories?

"First off, the August edition." I think, Mr. Fearn, should be rated very highly, for

his story, "Subconscious." That was the best story in the mag. Next to follow that story, is, "He Who Shrank" by Henry Hasse, that was "excellent." "Beyond the Stratosphere" by William Lemkin, Ph. D. should be rated as "good," although, I have read much better stories by Dr. Lemkin. "Dr. Dimmit Seeks Redress" by Miles J. Breuer, M. D. rates as "fair."

Before I go any further, I would like very much to thank Dr. T. O'Connor Sloane, Ph.D. on his Editorials in every AMAZING. I read every one of them. I must say, they are very educating. And, I fully understand, the trouble Dr. Sloane, the editor, must go through in hunting up these facts, and go through the worry of putting out a mag. I have noticed in many of the letters found in "Discussions" where they slam and knock down the editor; because of some of the stories that are printed. Some fellows may not like them, others may! Naturally I don't like some stories found in AMAZING, especially "Hoffman's Widow," I don't see how on earth the author sent that story into AMAZING. It should have been put in some "adventure" mag. Now, back to the next issue of AMAZING. The October Issue.

I haven't read that story called "Uncertainty" by John W. Campbell, Jr. yet, due to the fact that I always save my serials until they are complete. "The Human Pets of Mars" by Leslie F. Stone, was very good. The next to follow were:—"Six Who Were Masked" by Henry J. Koskos, was the next best. And the last story that I read, and thought it wasn't so very good, was—"The Council of Drones" by W. K. Sonnemann. I don't see how five per cent of a "Queen Bee's" intelligence affect ninety-five per cent of a human being's intelligence, where that five per cent, could turn a man's mind to hate his own kind. If I, or my brain was projected out to some animal's body, and that animal had only five per cent of his intelligence left in his body, probably just instinct. You don't think that could overcome ninety-five per cent of my intelligence. Were I placed in a dog's body, and I saw a cat, I wouldn't run after it, because I, as a human being, wouldn't think of chasing a cat. And the dog's body couldn't move unless my BRAIN commanded it to move.

So, from the story of "The Council of Drones" the author had it, where five per cent overcame the ninety-five per cent of the man's brain-power—to instill a hate to overcome his own family.

I have formed a science club. And it is coming along very well. I have eight directors. One of them is Forrest J. Ackerman. He has contributed much to the help in

getting this club on its feet. We go after all science as possible. We have a 6" telescope in the club, able to take photographic plates. Have several chemical laboratories. We also have a lending library. And we are always in the market to obtain issues of all known science magazines from 1926 on up. If there is any person desiring to sell some of his books, please get in touch with me. We have about six hundred charts of the "Known Elements" with their atomic weights. They are sold at two for five cents.

To persons who would like to form branch clubs of the International Science League, or just be a member to our headquarters, may just drop us a card or letter, and I will send them their application to fill out. If you don't wish to join, and just would like to correspond with me, I promise to answer all letters, addressed to me. So, until you bring out a Quarterly I shall say cheerio.

Yours Very Truly,
VERNON WILFRED HARRY,
3806 So. Grand Avenue,
Los Angeles, California.

(We are glad to publish your letter of information and criticism, and wish you every success for your club. We are sure that Mr. Ackerman will be an accession to your Board. We like to receive such letters as yours in which well-thought-out criticism appears. If you will run through our Discussions you will see that we do not hesitate to give scolding letters a place in this section, but we do wish to avoid personal references to other publications.—EDITOR.)

A Pennsylvania Reader Writes That He Had Some Trouble or Delay Rather in Getting His Copy of the Magazine. There Was Absolutely No Reason for the Delay on Our Part

Editor, AMAZING STORIES:

Even though the October issue of A. S. was quite late in publication, it was an excellent one. You know, that's quite embarrassing—coming out late, I mean. Every day for three weeks I visited the magazine store and asked "Did the AMAZING come to-day?" only to receive the answer "No, but I believe it will be out to-morrow." The proprietor of the store must have believed me to be slightly "tetched in the haid" as Snuffy Smith would say. Anyway, as you already know, good old A. S. arrived in good style.

The cover was good, although I don't believe John W. Campbell would portray such a ship in his story. He is far more practical, anyway he usually uses molecular

propulsion, or something similar to propel the space crafts which he uses in his yarns. But maybe I'm wrong, I haven't read the story yet—two months is much too long to wait to conclude the yarn.

After reading the story I came to the conclusion that "The Human Pets of Mars" was the most outstanding story in the issue. Our very excellent authoress, Leslie F. Stone, has a way of writing which never fails to please me. The story was quite amusing, especially when "mister" throws Brett against the wall in order to teach him to "come here."

The next best tale was W. K. Sonneman's interesting story of bee-life. I thought this author's "Masterminds of Venus" very good, but "His Majesty, the Queen," pardon me, I mean "The Council of Drones," surpasses even that. Besides being interesting, the facts on bees were educational to those who never had the chance to study anything about them. By all means, keep this author writing!

L. A. Eshbach's second story in the series of "The Earth, Venus and Mars Transportation Lines" was as interesting as the first, "The Meteor Miners." Even though the science is practically non-existent in this type of story, they make interesting reading. Most of your readers buy the magazine for relaxation instead of scientific meditation anyway. Are there any more of this series ready for publication?

"Six Who Were Masked," Henry J. Kostkos' contribution, rates a G plus in my estimation. Adding the ratings of the entire four stories together, E, E, G plus and G plus, gives the October 1936 number a solid rating of E— (minus). Incidentally, this issue is the best since you degenerated to the smaller size (yeh, I'm another fan who wishes you would return to the more distinguished size of a few years ago). Another thing—what about another Reprint Quarterly? Two years have elapsed since the publication of the last one. Is there any chance of one appearing soon?

In the last year AMAZING STORIES has climbed from third place to a tie with— for first place. All you need is smooth edges to be the leading science fiction magazine. Adios until next issue.

ROBERT A. MADLE,
333 E. Belgrade St.,
Philadelphia, Penna.

(Practically all of our readers like Mr. Campbell's works so you are with the majority. Miss Leslie F. Stone has developed in a few years into a very favorite author. Mr. Sonnemann's story of Bee Life is espe-

cially valuable as there is so much of the real life of bees described in it. As you say the facts in the story were educational and there has been a great deal of study given in the past to these insects. One factor in our change in size from the large to the small was that many objected to the large one. They seemed to have been a feeling too, that the large highly colored cover attracted too much attention and the change to the smaller size, which is really a library size, has been approved of by many.—EDITOR.)

A Scolding Letter from an Esperantist. The Reader Will Have to Guess at His Name

Editor, AMAZING STORIES:

Kara Sinjoro,

I will start out with a large brickbat: I haven't liked the past bi-monthly issues. Instead of improving, you have been doing exactly the opposite! As I stated in my last letter, since 1934 you have been improving all the time, until October '35. Then was when you started on the down-grade. You have had very few stories per issue. What stories there were, were fairly lousy. Some were good. One of your worst was "Hoffman's Widow."

I would hate to see your mag go out of circulation, but I don't see how you will be able to help it if you keep going at the rate you have been. In trying to get another reader for AMAZING, I almost hate to admit that I read such trash as has appeared in the last few issues. I don't know how you can ever expect to get any new readers. You know, we readers can't do *everything* for you. You've got to put readable stories in the mag at least.

You are quite correct in the August issue when you state that you did not change the size of the type, that you merely changed the style. But, the present face, which is Century Expanded, takes up more room per letter than the other face. Do you deny that?

I agree with Mr. Kirshenblit in the May '35 Discussions. It is terribly narrow-minded and unsportsman-like to substitute asterisks or x's for the names of your competitors. It wouldn't hurt you or anyone else to print the name Wonder Stories or Astounding Stories. The other mags will at least put their rivals' initials in place of the full name.

"Liners of Time" was an excellent serial. If only all your stories were as good as before mentioned. "A Modern Comedy of Science" was another good one. Jones' 21MM392 stories are always good. "Mr. Dimmit Seeks Redress" was fairly good, although some-

what similar to "A Modern Comedy of Science." (You see, there are some things that I like about AMAZING, although they are rare.)

But then, I wonder how long the good things are going to last? You have almost lost me as a reader, but not quite. Perhaps you would be better satisfied if I did quit reading the mag, because then you wouldn't have to read my terrible brikbatty letters!?

O well, try to improve so that you can truly be "The Aristocrat of Science Fiction . . ."

ROY ESPERANTIST,
251 East 69th Street,
Los Angeles, Calif.

P. S.—Thanx for bringing back the old cometail title. . . .

(We do not deny anything about the type in which this magazine is printed. We can see no occasion for doing so. There is a personal touch in putting the names of other magazines in full or even in recognizable initials, and anything like personalities is a thing we wish to avoid. What you refer to as your "brikbatty" letters we are quite pleased to read. Wouldn't your adjective look better with a letter 'c' before the 'k'? There are other orthographical eccentricities in your text.—EDITOR.)

A Correspondent Who Has Back Numbers To Sell

Editor, AMAZING STORIES:

I have been a more or less constant reader of AMAZING STORIES for the last nine years. During the last few years the press of college work has kept me from being a very faithful adherent, but I remember vividly the intense eagerness with which I used to await the arrival of the latest edition of A. S. at our corner news-stand. It is in memory of that interest that I am writing this letter.

I have a file of A. S. Monthly from Oct., 27, to May, 32, incl., complete with the exception of: Nov., 27; Feb., 29; and Apr., 30.

I have also the following Quarterlies: all 4 of the 28 series; 3 of 29, Sum. ed. missing; 3 of 30, Fall missing; 3 of 31, Spring missing; and the Winter and Spring-summer editions of 1932.

I should be glad to dispose of these issues to those who will be able to make better use of them than I now can.

ROBERT C. JONES,
H-52 Winthrop House,
Harvard University,
Cambridge, Mass.

A Letter from Herne Hill, England.

Editor, AMAZING STORIES:

This is my second attempt to gate-crash the "Discussions" department.

I've read A.S. for a long time—since 1931, and have always found it interesting and enjoyable.

I see that some of your readers welcome correspondents . . . well, I too, would like to hear from some of them. Especially those who want back issues. I have a fair stock of A.S. and other science-fiction magazines—I can't list them here, there's too many . . . but if folks will just write and say what they want . . . I can guarantee answers to all correspondents.

Now for a few words about the mag.

Why don't you make the "Discussions" larger? Couldn't it swell three or four sheets? I always read that part first—it is good to see the comments and criticisms and to note the friendly and pleasurable atmosphere of the whole column.

And what about that English Edition which was coming some time back? Your magazines are miles too scarce over here—we literally have to wait upon one another to devour the contents . . . and the newsstands don't seem to have too many either . . .

I note that another English reader—Les. A. Petts—with whom I correspond regularly (thanks to A.S.) wants photographs and more "data" . . . and flicks from science films . . . well, why can't we have 'em? . . . it's a swell idea, almost as swell as that English Edition!

Well, I wish A.S. all the best, and I'm hoping to get some letters from your readers. . .

FRED R. NAWBEY,
135 Casino Avenue,

Herne Hill, London, S.E. 24, England.

(Your Post Office address is interesting, carrying one into the scene of poor Falstaff's torments. We are unable to supply all the back issues our correspondents want, so it is probable that you will get some answers to this communication. As for the "Discussions" we would be glad to give several pages more, but the trouble is that we are a story magazine, and discussions are not stories. A consignment of AMAZING STORIES goes to England every month regularly. You will find the address of our agent in London printed on the contents page. We are taking care of England—now let England take care of us. What is a "flick?" The word appears in your letter—EDITOR.)

An Interesting Note on the Status of H. G. Wells as the Father of "Science Fiction." His Predictions Fell Far Short of What Has Been Accomplished in Recent Times

Editor, AMAZING STORIES:

As a fitting beginning to this letter, I'll toss one tiny brickbat. Your magazine is too erratic in its date of appearance on the newsstands. To illustrate: the August issue appeared on the stands more than a week before the first of the month; but when the two months were up from that date, the October issue did not appear. The days went by—each finding me in a more nervous condition than before—but still no October issue. The first of August rolled by; the second; the third; the fifth; the tenth; and still no AMAZING STORIES on the stands! By that time I was a nervous wreck (well—almost, making at least two trips per day to the nearest newsstand in quest of the magazine which still failed to appear.) It was not until the fourteenth of August (nearly three months after the appearance of the August issue) that my search was rewarded with success in the form of the October AMAZING STORIES. Surely you could, with little extra effort, choose a certain date of publication for your magazine—say, the first of the month, or the first Thursday of every other month—and save us fans a lot of shoe-leather and a lot of patience.

Whatever failings it may have, AMAZING still has the best readers' department of the three s-f magazines—a nice variety of letters, not all praise, and not all mere criticism of stories, but varied and honest-seeming opinions on the part of the "Discussioners." Mr. Frank C. Daubacher's letter this month was especially interesting. He mentioned some of Jules Verne's prophecies which have come true, and gave me an idea. Lately I've been reading a lot of H. G. Wells's science-fiction stories—I believe I've read nearly every one of them that he's written; and I think he ought to be called "The Father of Modern Science-Fiction." The basic idea for nearly every science-fiction story has descended from H. G. Wells. He wrote of time travel (*The Time Machine*), of space travel and adventures on other worlds (*First Men in the Moon*), of interplanetary invasion (*The War of the Worlds*), of adventures in size (*The Food of the Gods*), of another dimension (*The Plattner Story*), of suspended animation, and the future of the world (*When the Sleeper Awakes*), of future wars (*The War in the Air*, *Dream of Armageddon*, and others), of accelerating drugs (*The New Accelerator*), of adventures in the deep sea (*In the Abyss*), of invisibility (*The Invisible Man*), of strange creatures

from the sea (*The Sea Raiders*) of bacteriology (*The Stolen Bacillus*), of strange plants (*The Flowering of the Strange Orchid*), and of many other themes used by present s-f writers. Now, the idea. In his *Sleeper Awakes*, and others, Wells depicts the airplanes of the future as being clumsy, unmanageable, open frameworks, with wings of every variety in all sorts of positions, and weak, flapping, propellers. That was his idea, in the last years of the 19th century, of what airplanes would be like in the 21st. Now, in less than forty years, we have planes which go three times as fast, fly three times as high and much more than three times as long as any he dared imagine. And still, his "flying machines" seemed marvelous and impossible forty years ago. Is it not possible, then, that many of the stories which seem fantastic now, may actually fall short of the truth as far as future inventions go? I doubt if man will ever reach the heights depicted in J. W. Campbell's *Invaders from the Infinite*, but less than that. . . . Who can tell?

And now, to get back to AMAZING STORIES. I would not go so far as to say that your magazine is the best science-fiction magazine on the market; but neither would I downright declare that it's the worst. It has its good points, as have the others; and the matter of rating the three magazines depends only on which points one considers the most important. As for AMAZING, I would say that the interesting editorials, the fine readers' department, and the excellent arrangement as to lengths of stories are big points in its favor. And beside these, I feel a great affection toward your magazine for the steady, excellent quality it has maintained for so many years in the past. I began reading science-fiction quite by accident in the summer of 1929. Since then I have read every copy of AMAZING STORIES & QUARTERLY within ten days of its appearance on the stands. In seven years one can get pretty much attached to a magazine; and I, for one (and there are others), wouldn't think of quitting it if you doubled the price.

A few words on the October issue. John W. Campbell is, in my opinion, the best s-f author living; so you can imagine what a temptation I have to resist to save all parts of his *Uncertainty* before beginning to read it. How I welcome the reappearance of Campbell! Of the complete stories, I thought *Human Pets of Mars* best, and all of them pretty good. Of the illustrations, the best was the one for *Outpost on Ceres*. However, Morey was a bit below par this month. I wonder who the new artist you're going to try is.

And in case this letter, or part of it ever sees print, I hope you'll include this last paragraph. I am desirous of rereading J. W. Campbell's *Black Star Passes*, and the issue of AMAZING containing it (Fall, 1930, QUARTERLY) has somehow strayed from my files. I will pay 75c for the issue, in case anyone would like to sell. Magazine must be in good condition, complete with covers.

OLIVER SAARI,
1427 Logan Avenue North,
Minneapolis, Minnesota.

(Your resumé of H. G. Wells' prophetic powers is very interesting. He undoubtedly felt that he was going pretty far in his description of the airplane of the future, but facts have far exceeded his prophecies, daring as they must have seemed to him as well as to his readers. Critical letters of his early period of writing might make interesting reading.—EDITOR.)

A Cheerful Letter Even If It Did Contain a Comparison

Editor, AMAZING STORIES:

Within the last few months your magazine has rapidly improved, although, in my opinion, it has a long way to go before it reaches the standard of *****. If you keep to your present standard of stories, by all means stay Bi-Monthly.

Lately, Morey's covers are as good as Paul's. His inside drawings, too, are much more lifelike than before. Continue the good work, Leo!

Your best authors are Dr. Keller, Hyatt Verrill, and Neil R. Jones. The best stories in the last few issues are, "Labyrinth" (All the Jameson stories are excellent), "We of the Sun," and "The Fall of Mercury."

I am willing to pay one shilling (25 cents) for each A.S. containing the "Skylark" stories, and the issues containing the serial, "Triplanetry." Will any readers who has these issues for disposal please write to me as quickly as possible?

Good luck to AMAZING STORIES.

KENNETH T. HAWKES,
45, North Street,
Bridgwater,
Somerset, England.

(We doubt if you can find the issues of AMAZING STORIES you refer to. The asterisks we have inserted in place of the initials you employed mean that we think comparisons are odious. Thanks for your good wishes.—EDITOR.)

A Friendly Letter from an English
Correspondent

Editor, AMAZING STORIES:

May I take this opportunity of congratulating you on this December issue of AMAZING STORIES? It has superseded all other of the issues of 1935. "The Fall of Mercury" was quite the best story I have read for many months. I first came in touch with your mag. about 1931, when I was given several old copies from 1928 to 1930. The stories you published then were much in advance of your present day "yarns", but this December copy seems to be returning to the realm of first class science-fiction. I, personally fail to see what other readers are grumbling about Morey's illustrations for, because they are quite O.K. for a book of this character. In one of your rival magazines, the artist ??? seems to dip his brush in the gaudiest colors he can think of and the result is one of the reasons why so many people wear spectacles. Any rate, to turn to the stories, I think the best story printed was "Spacehounds of IPC." I read the first two instalments with bated breath but to my disgust, I found I could not get hold of Instalment III concluding it, so if any kind friend would like to send me a copy, I'd be eternally grateful. Another good story was "Armageddon 2419 A.D."

To sum up your December issue, I would place the stories in this order:

1. "The Fall of Mercury." Indubitably the best. 2. "The Symphony of Death." 3. "The Meteor Miners." 4. "Draught of Immortality." 5. "Restitution." This last story is, in my opinion, more suitable for including in a horror magazine, and should not be allowed to stray into any books of real science-fiction.

I have now a few suggestions to make:

1. Increase the size again.
2. Include more-interplanetary stories. The "Universe Wreckers" was a good one. Let us have a few more like it.
3. Lengthen the Editorials. They are excellent.
4. Include more futuristic and time travel stories. On this point, I disagree with Charles Pizzano, for he says keep them out. I feel sure that many other readers will back me up.

5. Give us trimmed edges, Please. All English Mags have them, what is to stop you?

I would like to back up Douglas W. Mayes in his fervent desire for an English issue of AMAZING STORIES. It certainly would be greatly appreciated up here in Lancashire for most people are very interested in Science Stories. If I get hold of an issue of the book about 10 friends of mine

immediately want to borrow it, so that if it really was started, there would be a tremendous amount of readers.

It does not greatly matter even if we get our copies about three months old, the quality of the stories still remain, and we are thrilled to the bone.

I have written to you about three months ago, but I think I must have put the wrong address on the envelope for it came back bearing one of the greatest insults you have ever had—"not known." I wondered to myself if the U.S.A. postal authorities are so unimaginative as having never heard of such a good publication.

I think I'd better finish now, or else I might find something to grumble at, so wishing you the best of luck.

H. G. LEE,
424 Chaddock Lane, Astley,
Manchester, England.

(For some reason we always receive the nicest kind of letters from England. AMAZING STORIES has an English agent, whose address you will find on the Contents Page. He receives the copies with regularity. Besides his supply a great quantity are taken by the Woolworth Stores. You might tell your friends to get their own copies and not rob you. We will see if we can find the back issues you ask about. Thanks for your appreciative letter.—EDITOR.)

Abstruse Fantasies Treated by a Young Man
Editor, AMAZING STORIES:

Crazy cranks, critics, fans and last and positively most, Editor, listen intently while I further graciously seem to enlighten the populace of the twentieth century. I think I have found a new and more destructive objection to the possibility of time travel. I think many an author saw this, but didn't bring it up, for fear it would endanger the plausibility of his plot. But I bring it into the open now—Two things cannot exist in space at one time—a physical law. It means that one chair can't stand where another chair stands at the same time. That means that the molecules, the atoms, the protons and electrons can't exist inside others of the same that compose the other chair. You, if you could creep into tomorrow, couldn't get there and live, nor could you get there with a whole electron left—there is an atmosphere tomorrow as well as today—unless you think the world ends tomorrow. And you would be attempting to occupy space that is already filled by either solid or gases. Even if you got there safely, you couldn't move; you, belonging in the past,

could not influence any matter to move, because it never did move anyway, that argument would be worked better about the past. How can you go into the future when you can't emerge in a live world out of time and live? Either by suspended animation (in which progress is already taking place) or by emerging in a perfect vacuum and only being an onlooker. But vacuum left, I think, by the body removed into time, would have a tendency to draw back that body into its original space.

I would be glad to correspond with persons anywhere. Preferably those near my age, 17. Especially those interested in art and writing fantastic fiction. And certainly none not interested extremely in science fiction, and, of course in science. For those interested, I have some old science fiction magazines I will sell.

NILS HELMER TROME,
Fraser Mills, Box 3,
B. C., Canada

(This letter must speak for itself; it rather passes our comprehension. The going into the future has been a basis for a number of excellent stories, but it is to be hoped that no one believes in the possibility of such migrations. We cannot see the need of finding a new and more destructive objection to the possibility of time travel. Of course it is impossible, but it gives a good basis for science-fiction stories.—EDITOR.)

A Few Words of Appreciation for "Our Magazine."

Editor, AMAZING STORIES:

I was glad to notice, by the August issue, that AMAZING is on the upward trend again. By this I mean, the excellent issue you turned out. The stories were all very good. Take "He Who Shrank." Now, although I have heard of Hasse often as a fan, I have never heard of him before as an author. I was frankly amazed at the quality of the story he turned out. I hope, when he has more stories printed, that they are all as good as his starter, "He Who Shrank."

"Subconscious" by Fearn was truly an amazing story.

"Mr. Dimmit Seeks Redress" was a gem of a story. While there is not much of a story (that is in length, or quantity) what is there is very well worth while reading.

I am glad to hear that the circulation is growing, for that will mean that AMAZING will return as a monthly.

To Hayward S. Kirby, Jr., "When The Sleeper Wakes" was reprinted in Vol. 1, No 1 AMAZING STORIES QUARTERLY.

The best inside illustration for the month was for "Beyond the Stratosphere," the worst, for "Subconscious."

Notice: in response to the many readers requesting back numbers of AMAZING STORIES, I wish to say that I have quite a large number on hand. This number includes Quarterlies & Monthlies. In sending for list, readers will please submit a 3c stamp to cover cost of sending list.

As a closing request, What about a Quarterly?

JOHN V. BALTADONIS,
1700 Frankford Ave.,
Philadelphia, Penna.

(Many thanks for the encouraging words of your letter. The question about a Quarterly cannot be answered yet.—EDITOR.)

A Very Pleasant Letter From England. The English Readers Seem Always (or nearly so) to Like A. S.

Editor, AMAZING STORIES:

I must write and thank you for the wonderful way in which "Our Mag." (Hooley, W. Conover, Jr.) (O. K. Fitzgerald) has pulled up in the last few bimonthly editions.

His covers have improved as well as Morey in general. The story standard has come up and the magazine as a whole seems much better. If only Morey would produce more illustrations like that for "The Sword of Akalah", which was another excellent yarn. Your editorials are wonderful. The "Isle of Juvenescence" was excellent, "When the Meteor Struck" ditto, "Luvium Under the Sand," not quite so hot. The serial looks promising. On the whole a good edition.

HUGH E. ATCHESON,
72 Farningham Road,
Caterhan, Surrey, England.

(After running over some letters whose emphasis is strongly on the side of criticism such approval as expressed in your letter is pleasant for an editor. We thank you for your appreciation.—EDITOR.)

Back Issues For Sale

Editor, AMAZING STORIES:

I often notice requests in your Discussions columns for back issues. I have a complete set from Vol. 1, No. 1 to Vol. 10, No. 2 (May 1935) which I intend to sell. I will sell the set complete or each volume separately. I will be glad to hear from the readers.

EDWIN S. KESSLER,
1099 E. 97,
Cleveland, O.

A Very Flattering Letter from an English Correspondent

Editor, AMAZING STORIES:

I have recently purchased and read the June issue of AMAZING STORIES. Though the mag is two months old, the contents don't spoil with keeping, so the science fiction fans across here, get just as much of a kick out of the stories as those who get the book brand new. I am pleased to say that A.S. is definitely improving and if you keep it going on at this rate, you will soon reach the 1932 standard again.

Another point which I am sure most of the readers appreciate is the lengthening of the editorial, which is intensely interesting. Keep it up.

Here is what I think of the June issue.

1. Part I of "Beyond the Stratosphere." This is a great start, and if the second part is as good, should rank among the 1st class stories.

2. "When the Meteor Struck." Also very good.

3. "Luvium under the Sand." This was a really enjoyable story. I am not sure whether I read its predecessor Luvium, but parts of it seem familiar. Morey's illustration of this story is not up to standard.

4. "The Sword of Akalah." Not bad.

5. "The Isle of Juvenescence." I am sorry to say that this story did not appeal to me. It seems more fitted to go under the classification of "weird" Scientifiction stories by the thousand relating to the "transference of brains" number, and I thought that you, with your super mag would be able to manage without one of these.

Don't think that I want to condemn the author, for I appreciate the fact that this type of story might appeal to a lot of readers and I should not like to appear selfish.

Well to sum up, I think I can describe this copy in two words—*quite good*.

With best wishes for the future, I am,

Yours sincerely,

H. G. LEE,
424 Chaddock Lane,
Astley, Manchester,
England.

(Our letters from England and one from a first cousin, in Australia, are always very flattering and in your case criticism is mingled with flattery so as to give a real meaning to it. We wish to thank you for your good opinion as we are quite anxious to have AMAZING STORIES liked in your country and as you will observe from our contents page, we have a London Agent who has much interest in the magazine.—EDITOR.)

A Letter of Severe Criticism. We Wonder If We Really Deserve It

Editor, AMAZING STORIES:

I have been meaning to write to you for some time, but have kept putting it off. I wonder if those of your readers who shout that AMAZING STORIES is the best of all three, buy any other science-fiction magazine. For example: compare the latest issue of one of your competitors with your own latest. In the August AMAZING, there is a serial (and a pretty poor one at that!), a short story, and two novelettes. Now look at your competitor: a good serial, one novel, two novelettes, four short stories, and a science feature. And in the rival, we get all this every month for a lower price. Your magazine seems to rate highest in Australia. As many have admitted, they get no other science-fiction there. Hence, they call AMAZING the best, not knowing how much better one of the others is.

Another point: you have but one artist. If you cannot afford another, why under the sun didn't you get a good one? Morey is like Brown—only good for cover work. Look at the illustration for "Mr. Dimmitt Seeks Redress." Notice the faces. Also, why the dust and wind if Graw's car is motionless in relation to Dimmitt? Evidently Morey does not trust himself to draw machinery, as he always seems to illustrate a portion of the story where there is none.

Now, don't get the idea that I am a crank; I am not trying to say that AMAZING STORIES is no good, but that another mag is better. And any fan who will sit down and honestly compare the two must admit, to himself if not to others, that AMAZING STORIES suffers greatly by the comparison. If you must have so few and such mediocre stories why not lower the price?

I'm going to answer one question beforehand. Anyone who criticizes the mag is always asked, "Why buy it if you think it is so poor?"

G. R. GRIFFIN,
1 Monument St.,
Portland, Maine.

(It would seem that the most obvious response to your letter would be some kind of a reaffirmation of the old proverb that "comparisons are odious." We feel that there is always a possibility of a better and even of a worse magazine. We leave the shouting readers you refer to for your investigation. We do not see how they can consistently compare merits of three publications if they only read one. Perhaps we should comfort ourselves with your acknowledgment that AMAZING STORIES is some good. So we will drift along, even if sorry that you do not like us.—EDITOR.)

A Highly Appreciative Letter, Even If the Writer Does Not Approve of "Hoffman's Widow."

Editor, AMAZING STORIES:

Your October issue was great! And I don't mean maybe! John W. Campbell's new novel "Uncertainty" starts off real good. In the grand manner, it is easily the best serial now running in any stf. magazine. The old magazine has shown signs of great improvement in the last few issues. Keep it up and maybe we'll go monthly again. Happy days!

Kostkos' "Six Who Were Masked" is a well worked out story and unique in its way. He's a good writer and, I think, one of your "finds."

I am one of those who thought "Hoffman's Widow" decidedly out of place. When we want AMAZING STORIES we want them Scientific! Not anything else! There are magazines like Fanciful Tales for weird-fantasy, and that story probably wouldn't even fit there.

You may be interested in knowing that the International Scientific Association, which is the present day descendant of the Science Correspondence Club founded in the pages of A. S. many many years ago, is now the most rapidly advancing science-hobbyist and science-fictionist club of today. In spite of several puny imitations, none can come up to the I. S. A. In our National Library we have a complete file of AMAZINGS in good condition which members all over the world (U. S., Canada, England, Rhodesia, Colombia, etc.) can and do borrow. There's plenty demand for it!

Right now, the Association is working again on its rocket experiments with an eye to rocket-mail. You know, we pioneered with the First American Mailrocket flight of 1935.

In case any of your readers are interested, our headquarters are at 31-51 41st Street, Long Island City, N. Y. Write there for information. And if they want a copy of our official organ "The International Observer" drop a dime in the envelope. That is, the U. S. fellows should. Britons and Aussies just ask for it.

By the way, did you know that Dr. David H. Keller has just had a book published in France containing translations of three of his A. S. stories? They are "The Ivy War," "Stenographers' Hands" and "The Automatic Nurse." Looking forward to more and many more issues of the "Aristocrat of Scientifiction."

BRAXTON WELLS,

1657—15th St., N. W.,

Washington, D. C.

(Your report of the progress of the International Science Association is very interesting. We knew that Doctor Keller was

making his *entrée* into France. He deserves it, and we are sure that he will win wide appreciation on the other side of the great water. We even feel that it is a sort of tribute to AMAZING STORIES.—EDITOR.)

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, and March 3, 1933.

Of AMAZING STORIES, published Bi-monthly at Springfield, Massachusetts, for October 1, 1936.

State of New York }
County of New York } ss.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared J. J. Butler, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the AMAZING STORIES and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, Teck Publications, Inc., 461 Eighth Ave., New York, N. Y.; Editor, T. O'Connor Sioane, P.D., 461 Eighth Ave.; New York, N. Y.; Managing Editor, None; Business Manager, J. J. Butler, 461 Eighth Ave., New York, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other non-incorporated concern, its name and address, as well as those of each individual member, must be given.) Lee Ellmaker, 461 Eighth Ave., New York, N. Y.; Teck Publications, Inc., 461 Eighth Ave., New York, N. Y.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is (This information is required from daily publications only).

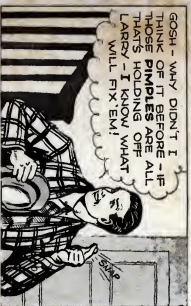
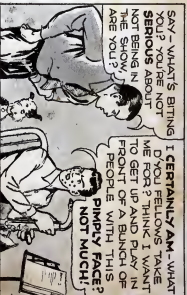
J. J. BUTLER, Business Manager.

Sworn to and subscribed before me this 24th day of November, 1936.

EDYTHE E. TOMPKINS, Notary Public.
Commission expires March 30, 1938.



READ HOW LARRY'S PIMPLY FACE ALMOST MADE HIM QUIT THE SHOW



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to clear these skin irritants out of the blood. Then, the pimples go. Just eat 3 cakes *daily*—one about ½ hour before each meal—plain, or in a little water. Do this until your skin is entirely clean again. Start now!

—cleans the skin
by clearing skin irritants out of the blood

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ALBERT MILLS

3721 Monmouth Ave.

Cincinnati, Ohio

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ALBERT MILLS, President
3721 Monmouth Ave., Cincinnati, Ohio

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